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# USAID/NEPAL FLOOD RECOVERY PROGRAM

## ANNUAL PERFORMANCE REPORT
## OCTOBER 2010 – SEPTEMBER 2011

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***COVER PHOTO: In disadvantaged rural communities of the Terai, women are learning about sanitation, hygiene and nutrition that will help improve the quality of life for themselves and their families.*** *Photo by Fintrac Inc.*

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**ANNUAL REPORT**

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# CONTENT


**SECTION 1: EXECUTIVE SUMMARY ..... 7**

**SECTION 2: IMPLEMENTATION ..... 8**

**2.1 Program Description ..... 8**
*2.1.1 Geographic Focus ..... 8*
*2.1.2 Performance Indicators ..... 11*

**2.2 Approach and Methodology ..... 12**
*2.2.1 Overall Program ..... 12*

**2.3 Reporting Period Activities ..... 13**
*2.3.1 Achievements of Phases I and II ..... 13*
*2.3.2 Progress in Phase III ..... 14*

**2.4 Challenges ..... 19**

**SECTION 3: RESULTS ..... 20**

**3.1 Progress to Date ..... 20**

**3.2 Progress Per Program Objective ..... 20**
*3.2.1 Infrastructure ..... 20*
*3.2.2 Livelihoods and Income Generation/Commercial Agriculture ..... 22*
*3.2.3 Sanitation, Hygiene and Nutrition ..... 26*
*3.2.4 Strengthening Local Organizations ..... 28*
*3.2.5 Protection of Women and Children ..... 29*

**SECTION 4: PRIORITIES FOR NEXT QUARTER ..... 31**

**SECTION 5: MANAGEMENT REPORT ..... 32**

**5.1 Project Staffing ..... 32**

**5.2 Expenditures to Date ..... 32**

**5.3 Management Issues ..... 32**

**ANNEX I: SPOTLIGHT ANALYSIS ..... 33**

**ANNEX II: PERFORMANCE MONITORING PLAN ..... 35**

**ANNEX III: USAID-NFRP CLIENT DISTRIBUTION MAPS BY REGION ..... 39**

**ANNEX IV: IRRIGATION MANUAL ..... 44**

# SECTION 1: EXECUTIVE SUMMARY

This is the annual report for fiscal year 2011 (FY11) of the USAID/Nepal Flood Recovery Program (USAID-NFRP) covering implementation and results for program components per Task Order No. EDHI-04-05-00007-00. The report summarizes activities from October 1, 2010 to September 30, 2011.

USAID-NFRP works with food insecure communities throughout the Terai and Hills regions to increase farmer productivity and income, rehabilitate and develop small-scale community infrastructure, and improve awareness of sanitation, nutrition, gender and protection issues. Under Phase III, which began in March 2011, USAID-NFRP is currently focused on improving the food security of communities in the Far Western region through targeted assistance in commercial agriculture, nutrition and productive infrastructure. Project achievements in these new areas include:

- Coverage Area: Providing technical assistance and improved technologies on 749 hectares for food security and high value crop initiatives and on 72 hectares for kitchen gardening in 132 wards of 29 program village development communities (VDCs). Formed 364 irrigation clusters from 3,143 commercial agriculture farmers and 110 kitchen garden groups from 2,259 households selected for nutrition and hygiene assistance.

- Nursery Management and Transplanting: Oriented farmers on market-based crop selection, distributed cost-shared seeds and supplies, and provided ongoing technical assistance to all 364 irrigation clusters on 749 hectares, including 164 hectares of early-harvest rice and 584 hectares of high value vegetables.

- Training of Farmers & Kitchen Gardeners: All 3,143 commercial agriculture farmers, including 1,070 women, have been trained in nursery preparation, production techniques, integrated pest management, pre and postharvest handling, and marketing management. The full syllabus for nutrition awareness, kitchen gardening and post-harvest management was also completed for the 2,259 kitchen gardeners and all 72 hectares have completed harvests.

- Irrigation: Completed installation of 105 shallow tube wells with motorized pumps. Completed feasibility studies and final designs of five surface irrigation systems in Dadeldhura and initiated subcontracts for construction.

- Baseline Information: Prepared social maps, family profiles and baseline surveys for all 2,259 kitchen gardeners and 3,143 commercial agriculture farmers. Completed surveys on local market systems, agro-vets, wholesaler and trader capacity. Assessed and mapped 85 local agro-vets and completed market surveys to assess seasonal price variations. Developed GIS mapping tools to support program planning and reporting.

- Coordination with Government of Nepal, NGOs and Private Sector: Conducted the *Market and Value Chain Envisioning Workshop* with 86 participants from local farmer and private sector associations, government agencies, Federation of Nepalese Chamber of Commerce and Industry and local chambers of commerce, the Agro-Enterprise Center, Seed Entrepreneurs Association of Nepal and the Pesticide Association of Nepal; as well

as the *Improving Linkages Workshop* with 15 pre-qualified local agro-vets and representatives of USAID-NFRP-assisted farmer groups.

The program's updated performance monitoring plan (PMP) is attached in Annex I. This document and all other project publications are available to USAID through the password-protected USAID-NFRP intranet site: *www.fintrac.com/nfrp*. A public access site is accessible at *www.usaid-nfrp.org*.

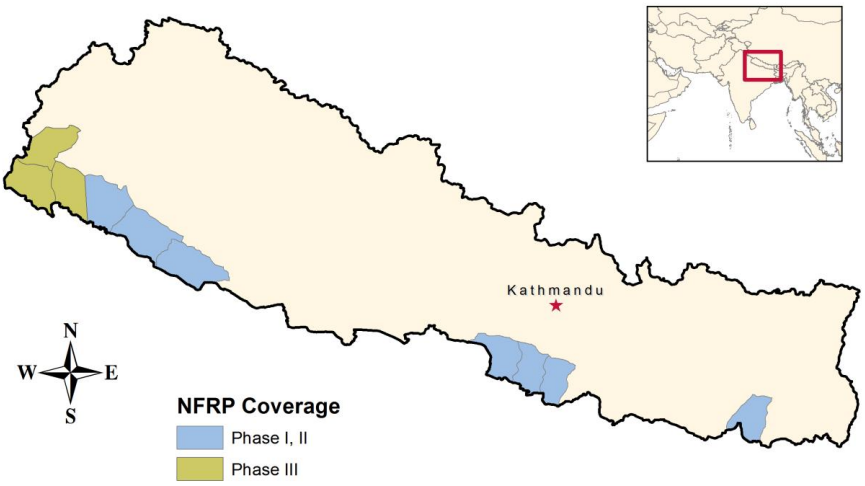



**Figure I: USAID-NFRP Coverage**

# SECTION 2: IMPLEMENTATION

## 2.1 PROGRAM DESCRIPTION

USAID-NFRP works with flood-affected communities throughout the Terai region to increase farmer productivity and income, rehabilitate and develop small-scale community infrastructure and improve awareness of sanitation, nutrition and gender issues.

Initially a 24-month activity designed to respond to the 2007 floods, USAID-NFRP received a 10-month extension from USAID/Nepal on October 21, 2009 to expand program operations to regions affected by the 2008 floods. Activities implemented in the 2007 and 2008 flood-affected districts are referred to as Phase I and Phase II, respectively.

On March 9, 2011, recognizing USAID-NFRP's level of accomplishments over a three year timeframe with a team that can effectively leverage local organizations and individuals to carry out program activities, USAID extended the program for an additional 18 months. The extension focuses on improving food security by expanding training to farmers in new food production technologies, linking producers to markets and input suppliers, and addressing infrastructure constraints including roads, bridges and irrigation access. The second extension period is referred to as Phase III.

USAID-NFRP is implemented by Fintrac Inc. in partnership with Nepal-based METCON Consultants, FORWARD, and a diverse group of local and national-level NGOs and private contractors.

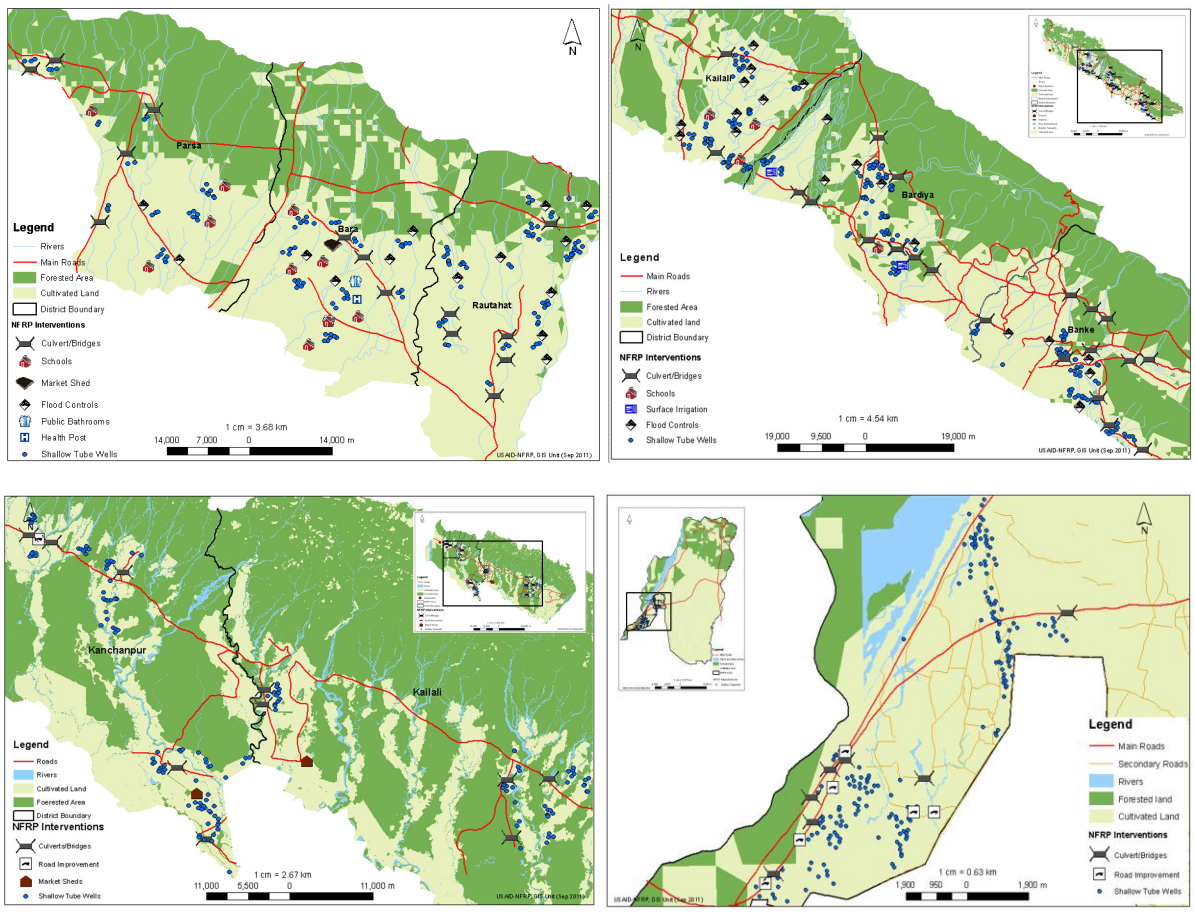
### *2.1.1 Geographic Focus*

As a result of the Phase III extension, nine districts throughout the Terai: Sunsari in the Eastern region; Parsa, Bara and Rautahat in the Central region;

and Kanchanpur, Kailali, Bardiya and Banke in the Mid/Far Western regions, as well as one Hills district, Dadeldhura.

Under Phases I and II, USAID-NFRP operated in eight districts throughout the Terai: Sunsari in the Eastern region; Parsa, Bara and Rautahat in the Central region; and Kanchanpur, Kailali, Bardiya and Banke in the Mid/Far Western regions. Through a comprehensive process of field assessment including vulnerability analyses, consultation with government agencies including Village Development Committees (VDCs), District Development Committees (DDCs), District Agriculture Development Offices (DADOs), Agriculture Service Centers, District Irrigation Offices, non-government and public private organizations and civil society, as well as extensive education and interaction with the potential farmers, developed in conjunction with USAID, 76 VDCs were selected for program support based on the severity of flood damage and levels of vulnerability. Within each VDC, clusters of communities considered most affected (varying in size, population, ethnic and social composition) were prioritized for intervention.

**Figure 2: Concentration by District**




*Phase III* – USAID is refocusing its economic development programming to meet the objectives of its Feed the Future initiative, which is designed to increase the availability, access, use and sustainability of food for families in developing countries like Nepal. USAID/Nepal's Feed the Future initiative will address food deficits that affect 43 out of Nepal's 75 districts, childhood stunting and wasting that are some of the worst cases in the world, and a per capita income that is the lowest in all of Asia. USAID-NFRP will continue its work in the Feed the Future target districts of Kailali and Kanchanpur

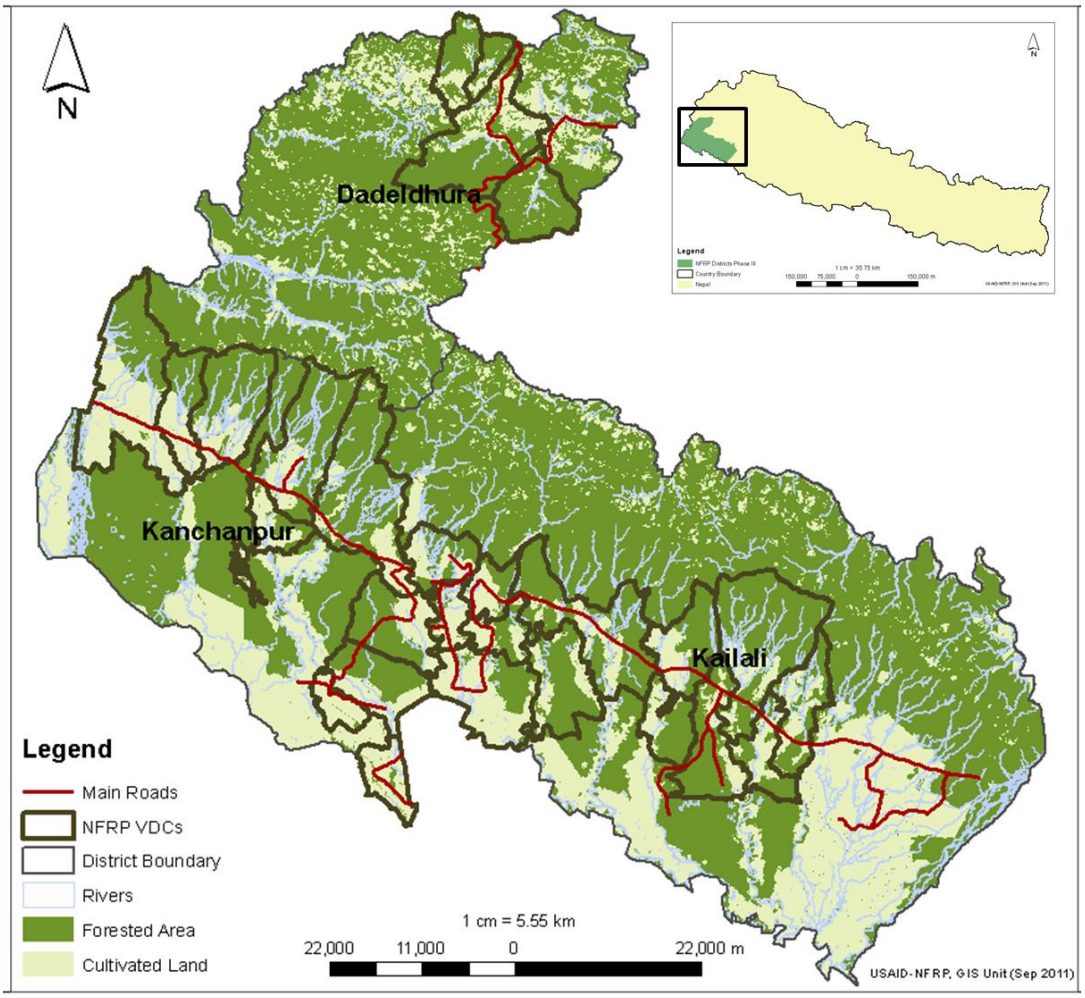
and extend to Dadeldhura to increase agriculture productivity and incomes, expand market linkages and trade, and improve the nutritional status of households.

Within each VDC, clusters of communities were prioritized for intervention based on selection criteria that analyzed population, social composition, vulnerability, availability of viable farmland, farmers' willingness to participate in the demonstration farming program, and farmers' commitment to sharing the cost of key productive inputs.

**Table 1: USAID-NFRP VDCs and Municipalities in Phase III**

| | | |
|---|---|---|
| **Far Western Region** | | |
| **Kailali** | | |
| Beladevipur | Chaumala | Darakh |
| Dhangadhi municipality | Geta | Malakheti |
| Masuriya | Pahalmanpur | Ramshikharjhala |
| Sandepani | Shreepur | Udasipur |
| Urma | | |
| **Kanchanpur** | | |
| Baisebichawa | Bhimdutta | Daijee |
| Jhalari | Kalika | Krishnapur |
| Parasan | Pipladi | Raikwarbichawa |
| Suda | Tribhuwanbasti | |
| **Dadeldhura** | | |
| Samaiji | Amargadhi | Asigram |
| Ajaymeru | | |

**Figure 3: USAID-NFRP VDCs and Municipalities in Phase III**




### *2.1.2 Performance Indicators*

**Phase III** began on April 1, 2011, in the Far Western districts of Kailali, Kanchanpur and Dadeldhura to:

- **Improve agricultural productivity** by supporting the progress of 2,700 farmers and 800 hectares of demonstration plots for an additional three crop cycles. Strengthen the ability of VDC-based producer groups to expand market linkages and trade of a larger range and quantity of products. USAID-NFRP's technical assistance will focus largely on effective planning, organizational development and improving farmers' linkages to the wider value chain, both in terms of the supply of inputs and credit as well as coordinated deliveries to processers, traders and markets. **Anticipated results** include a sustainable 300 percent increase in beneficiary farmers' annual incomes, $3.2 million in increased net sales, and more than 125,000 days of surplus on-farm employment.
- **Improve nutrition** in targeted communities by introducing kitchen gardens and providing training on the importance of incorporating a variety of products such as leafy greens, fruits and vegetables into the diet that will address caloric, vitamin and mineral deficiencies common in Terai populations. **Anticipated results** include the installation of 2,200 kitchen

gardens covering 75 hectares, and 4,900 households (30,000 people) with improved access, availability and utilization of a more diversified daily diet.

- **Improve productive infrastructure** that directly supports USAID-NFRP's agriculture beneficiaries in targeted districts. Projects will include construction of up to 20 market sheds for product consolidation, grading and marketing, which will increase market efficiencies. The project will also rehabilitate at least five surface irrigation sites, opening up hundreds of hectares of farm land to water access which will enable year round cultivation and up to three full crop cycles in those areas during the 18 month extension period.

## 2.2 APPROACH AND METHODOLOGY

### *2.2.1 Overall Program*

USAID-NFRP's approach to flood recovery and food security and the methodologies applied to each of the program's five components, have evolved periodically under the three, partially overlapped programmatic phases – Phase I: May 2008 to June 2010; Phase II: October 2009 to July 2011; Phase III: March 2011 to August 2012.

USAID-NFRP's top priority is to deliver an integrated package of quality services, inputs and training opportunities that directly responds to the immediate needs of flood-affected clients (beneficiaries) and also strengthen client capacity to manage future physical, economic or social threats. USAID-NFRP uses a participatory approach to program implementation, working directly to build community capacity to coordinate and mobilize interventions. The program staff is responsible for identifying, competitively hiring, and managing local organizations and companies to implement technical assistance, training and construction activities. By implementing program activities in partnership with these grassroots Nepali organizations, many of which are based in or near the targeted VDCs, USAID-NFRP ensures that there is a constant local presence at each program worksite. This achieves more effective interventions from a broader range of community members, provides more opportunities for direct feedback regarding program impact and builds local capacity.

USAID-NFRP's initial strategy for the infrastructure component was to rehabilitate existing small-scale infrastructure or develop new projects (river protections, flood controls, culverts, schools, bathrooms, roads and irrigation systems) that have been identified by a targeted community as the highest priority for their overall well-being. In Phase II, the component was modified to focus exclusively on rehabilitating or constructing infrastructure that directly supports and complements the economic development efforts of the program's agricultural beneficiaries. A similar approach is being applied to Phase III worksites, but the limited funding requires that the focus be on agricultural infrastructure such as surface irrigation, collection centers and markets that are more cost-effective and provide immediate benefits to emerging commercial farmers.

USAID-NFRP's approach to commercial agriculture under Phase III, previously termed Livelihoods and Income Generation (LIG), is to provide intensive, hands-on food production, marketing training and financial assistance to selected small farmers in targeted VDCs for three off-season cropping periods. The program introduces these farmers to new technologies and approaches in crop production and postharvest handling, as well as market price information and linkages. At the end of the 18-month program intervention, each farmer is able to sustain a farm using this new technology and replicate the model within their communities by using their farms as demonstration sites.

Components 3, 4, and 5 are sanitation, hygiene and nutrition, strengthening of local organizations and protection of women and children. These components are implemented by local NGOs that carry out capacity-building and awareness training activities while USAID-NFRP serves as the technical leader and manager.

## 2.3 REPORTING PERIOD ACTIVITIES

### *2.3.1 Achievements of Phases I and II*

**Infrastructure**

USAID-NFRP has completed 119 infrastructure projects in Phases I and II, benefitting more than 128,000 households and generating a total of 165,106 person days of employment. The program's initial 86 infrastructure projects of Phase I benefitted more than 57,000 households and generated 127,219 days of temporary employment for skilled and unskilled laborers in the six districts. In Phase II, an additional 33 infrastructure projects, benefitting 71,340 households and generating 37,887 person-days of employment, were completed in Sunsari, Kailali and Kanchanpur. Infrastructure projects included:

- Construction and rehabilitation of roads, bridges and culverts
- Erosion control, river training and embankment repairs (gabions, spurs, diversion channels)
- Construction of health posts, schools, latrines and other community infrastructures
- Community irrigation and drainage systems
- Market centers

**Livelihoods and Income Generation**

Phase II training and technical assistance activities ended in March 2011 and final harvest and sales information are now available for all three crop cycles. Famers participated in an 18-month training program that strengthened their skills and confidence in nursery preparation and management, soil preparation and manure application, transplanting, high-value crop production management, integrated pest management (IPM), compost production, pre-harvest management, postharvest handling, and marketing and commercialization.

Productivity and living standards are improving with agricultural income-generating activities. USAID-NFRP promotes improved skills and modern agriculture technologies to enhance the production of high-value crops. The program supports farmers for three crop cycles, and by the end farmers can sustainably exceed previous annual incomes by an average of 350 percent. Target crops include onion, chili, cauliflower, cabbage, long bean, cucumber, squash, okra and tomato.

Impacts on household incomes are assessed by understanding the improved economic productivity of farmers' main productive asset: their land. By comparing the net sales that farmers achieve during the program against what they were earning prior to assistance, USAID-NFRP determines the percent increase in their land's economic productivity (net sales per unit area of land, or NRs per hectare). This allows the program to set standards and targets for what its agricultural assistance activities can optimally achieve. It also provides proxy information on the specific effects that income generation through commercial agriculture has on annual household incomes. Results include:

- An average 665 percent increase in net sales per hectare.
- Development of 1,000 hectares of model farms.
- Installation of 686 shallow tube wells with motorized diesel pumps and 240 treadle pumps.
- More than 4,400 participants in the 18-month program.
- Organization of 710 production and irrigation management groups.

**Sanitation, Hygiene and Nutrition**

All Phase I and II activities are complete, including 120 awareness trainings and 120 refresher trainings for 3,697 adults and children. Major achievements include the independent construction of private toilets by most participants, as well as the domino effect the enhanced knowledge of trainees had on neighbors. A total of 1,715 households installed improved cooking stoves and trainings were conducted on the repair, maintenance and correct operation of the stoves. To ensure sustainability, one person per worksite was trained as a resource person to troubleshoot issues within their communities. 2,258 demonstration kitchen gardens were established.

**Strengthening Local Organizations**

In Phase I 60 community-based organizations (CBOs), 60 disaster preparedness and mitigation committees, and 60 youth clubs completed USAID-NFRP's full training program. USAID-NFRP supported each group's initiative by providing training and promotional materials, and furniture and supplies to set up their offices and carry out activities. Some groups have formally registered their organization with the District Administration Office (DAO) and are organizing community development activities with the resources they have generated. Training and technical assistance activities under Phase II began in May 2010, starting with the disaster preparedness and mitigation program in anticipation of the monsoon season. Subsequent long-term training programs for the youth clubs and community-based organizations began in early July and concluded in January 2011.

**Protection of Women and Children**

Phase I activities under this component were completed in February 2010, at which point 60 female trainers had participated in four weeks of training-of-trainers sessions to facilitate the implementation and management of 60 Better Life Option (BLOP) and REFLECT centers in their respective communities. A total of 4,320 orientation sessions took place for 1,395 adolescent girls in subjects such as personal development, reproductive health, human trafficking and the choice for better futures. Parents of adolescent girls were also trained on the various subjects, and 1,403 women and 324 men attended REFLECT sessions on gender issues and literacy. Phase II activities ran from March to December 2010 and targeted 604 young women and 602 parents.

### *2.3.2 Progress in Phase III*

USAID/Nepal has requested the Fintrac/USAID-NFRP team to:

- Continue its ongoing program with participating LIG farmers in the 12 VDCs of Kailali and Kanchanpur districts.
- Expand program support to neighboring communities within the same districts.

- Test Fintrac's land-based model for agricultural development in the adjacent Hills district of Dadeldhura.

Program implementation under Phase III began officially on April 1, 2011. The following details the progress in mobilizing program activities in the Phase III worksites through September 30, 2011.

## Commercial Agriculture

*Program worksites*

After assessments conducted in April, a total of 29 worksite VDCs across the three districts (13 in Kailali, 12 in Kanchanpur and four in Dadeldhura) were chosen for support in commercial agriculture. Fifteen will also be supported by nutrition and hygiene interventions.

*Land coverage*

USAID-NFRP is targeting a total of 749 hectares for the demonstration farming program, including the original 220 hectares under Phase II plus an additional 424 hectares in Kailali and Kanchanpur, and 105 hectares in Dadeldhura.

*Baseline studies & farmer profiles*

Baseline studies for all 3,143 farmers, including 1,070 women, were completed to capture key information on production, incomes, household consumption and nutrition indicators that USAID-NFRP will continue to measure throughout the life of the program.

*Farmer groups*

Field technicians have organized the 3,143 farmers into a total of 364 irrigation clusters, with each cluster ranging from five to 15 farmers. Cluster members share irrigation resources and are trained in the operation and maintenance of the systems supported by USAID-NFRP.

Irrigation clusters were organized into production groups with a range of three to 11 clusters per group, depending largely on the population densities of program worksites. Production groups are encouraged to collaborate primarily for marketing purposes, as their increased collective volumes of production should draw traders into their communities for common purposes. However, effective marketing requires good planning and recognizing regional and temporal market opportunities. Program agronomists and field technicians foster that process by providing targeted training and technical assistance to production groups, traders and other value chain actors. Coordination within the production groups continues to strengthen as farmers (and other actors, particularly traders and agro-vets) realize the impressive gains they can achieve in on-farm production and income generation.

*Crop selection, seed provision and nursery management*

Training in crop selection, nursery management and transplanting has been provided to all farmers. The crops transplanted in the first crop cycle to-date include capsicum, cucumber, cabbage, tomato, chili, cauliflower, eggplant, radish, cowpea, bean, rice and maize. Crop identification and selection, based primarily on market demand, is underway for the second crop cycle as well.

*Farmer training*

By the end of September, all 3,143 commercial agriculture farmers, including 1,070 women, have been trained in nursery preparation and use, production techniques, integrated pest management, pre and postharvest management, and marketing management. In addition, 141 neighboring farmers, inspired by the program's initial progress, have decided to enroll as trainees without requesting financial or in-kind assistance from USAID-NFRP.

Field technicians perform weekly visits to monitor the practical application of the skills and knowledge that farmers have gained following a performance monitoring tool developed by USAID-NFRP and providing on-site trainings and timely technical support, as required.

*Irrigation installation*

USAID-NFRP continues to promote groundwater irrigation in the Terai through shallow tube wells and motorized pumps in order to allow for counter-seasonal production during the dry season. Based on recommendations from USAID-NFRP's recent program evaluation, the brand and model of the motorized pump has been changed to maximize effectiveness and sustainability. This has more than doubled the cost of previous installations. In addition, USAID-NFRP has increased the cost sharing requirement for farmers from 25 to 40 percent. Despite this dramatic increase in cost sharing requirements, many farmers are still eager to contribute, especially those near previous USAID-NFRP worksites who have seen the results.

**Cost sharing** is a proven Fintrac methodology that jump starts investment in agriculture. Because most subsistence farmers cannot qualify for credit due to their low income potential, they need project support in order to purchase seed and other inputs for the initial phases of assistance. USAID-NRFP subsidizes 75 percent of the farmers' production package during the first production cycle. This subsidy decreases to 50 percent for the second cycle, and then drops to 25 percent for the third and final cycle of assistance. By this time the farmers are earning enough income, and recognize the value in purchasing hybrid seeds, fertilizer and other improved technologies, to finance their own inputs.

Shallow tube wells in the Terai release water at a rate of four to 10 liters per second, resulting in a total irrigation coverage potential of three to seven hectares per well. USAID-NFRP is promoting irrigation clusters with a maximum of 2.5 hectares of demonstration plots per shallow tube well, thus ensuring that participant farmers are able to produce and sell surplus irrigation water to their non-participant neighbors. By the end of September, 105 groundwater irrigation systems were installed and 40 sheds were installed to provide permanent protection to the pumps and wells.

Four piped irrigation systems and one lift irrigation system have been selected for USAID-NFRP support in the Hills area of Dadeldhura. Cost estimates and structural designs are now complete and construction will begin in November. Several meetings with the user groups and community members in Dadeldhura have been held. At each worksite, USAID-NFRP has organized two separate nine-member committees: one to support the construction process and another to ensure systems' effective operation and maintenance.

An irrigation user's manual for both field technicians and irrigation groups was developed by USAID-NFRP in September (Annex IV), which provides easy-to-understand information on surface and groundwater systems maintenance and operations and organizational management information.

*Mobilization of input services (agro-vets)*

USAID-NFRP completed a thorough survey and mapping of 85 agro-vets' (agricultural and veterinary input suppliers) operations in the three districts to assess their capacity to offer long term services to program farmers. Profiles for each agro-vet were prepared and 15 were selected by USAID-NFRP as having the highest potential. Multiple coordination events were organized, including the three-day *Improving Linkages Workshop* in late September which worked to:

- Establish relationships that can lead to long term business opportunities for the 15 selected agro-vets and reliable access to quality inputs for USAID-NFRP farmers.
- Train the agro-vets on laws and regulations relating to input services.
- Devise modalities for a voucher program to be implemented in the second crop cycle that will allow farmers to purchase the inputs co-invested with USAID-NFRP directly from one of the 15 selected local agro-vets.

*Market development*

Real-time market information systems are being developed by USAID-NFRP that can access price and product information via SMS messaging and local radio broadcasts. A comprehensive mapping exercise was completed in all three districts in May, identifying a total of 14 market and collection centers accessible to USAID-NFRP farmers. Project specialists are currently working with local markets to improve their coordination with program farmers, as well as identify technical and infrastructural constraints that can be addressed by USAID-NFRP. Feasibility studies were completed for eight potential sites where cost-effective marketing infrastructure can significantly enhance farmers' commercialization efforts and provide the needed facilities for local trade routes to develop.

In August, USAID-NFRP conducted the *Market and Value Chain Envisioning Workshop* with 86 participants from local farmer and private sector associations, government agencies, Federation of Nepalese Chambers of Commerce and Industry (FNCCI) and local chambers of commerce, AEC, SEAN and the Pesticide Association of Nepal. Workshop participants reviewed and assessed the local capacity of input services (agro-vets) and their accessibility to farmers, marketing (trade) networks, constraints to exporting to India, and the opportunities for further developing access to the national market.

*Coordination with key stakeholders*

USAID-NFRP leadership and field staff are ensuring good coordination with all key stakeholders, including local government agencies (DADO, DDC, VDC, District Irrigation Office, District Public Health Office), private sector organizations (chambers of commerce and industries, wholesale market dealers, agro-vets, Seeds Entrepreneurs Association, Pesticide Association), various NGO projects and donors in the districts, civil society groups, and business organizations. USAID-NFRP field staff participate regularly in DDC and VDC planning meetings, as well as in donor coordination forums such as the Agriculture Alliance, the Food Security Network and the United Nations Alliance. Program staff also recently participated in the Agriculture Strategy Development workshop organized by the Ministry of Agriculture and Cooperatives and CYMMIT's workshop on maize value chains and marketing.

*Monitoring & Evaluation*

Methods, tools and templates for monitoring, outreach, baseline recording, reporting and dissemination of experience and results have been developed and all field technicians have been oriented in their use. M&E staff conduct monthly review meetings with agronomists and field technicians to review progress, troubleshoot issues and plan for the next month's activities. All results data, as well as management information and training records, is uploaded weekly to Fintrac's internet-based monitoring system, CIRIS.

**Nutrition and Hygiene**

*Work areas and VDCs*

USAID-NFRP is implementing its Phase III Nutrition and Hygiene program in 15 VDCs of the Terai, including 10 in Kailali and five in Kanchanpur. Site selection criteria was based on food insecurity, poverty indices, areas with limited experience with kitchen gardening, poor hygiene, communities that do not overlap with USAID-NFRP's commercial agriculture program, and the lack of other donor-funded initiatives.

*Worksite clusters and households*

USAID-NFRP's primary qualification for beneficiary selection is that all households must have pregnant women or children less than two years of age. In total 2,259 households were selected to participate in the one-year nutrition and hygiene training program which also includes the provision of a 333 square meter (one kattha) kitchen garden for every family. The program now operates in 38 wards within the 15 VDCs, and covers an area of 72 hectares with demonstration kitchen gardens.

*Baseline studies & household profiles*

Baseline profiles and social mapping were completed for all 2,259 households. These studies are organized into 112 nutrition action groups with an average of 20 households per group. A body mass index baseline study was also completed on a sample of 10 percent of all households which will be used to measure the program's effectiveness on improving the nutritional, hygienic and sanitary standards and practices of participant households, as seen through the changes in household members' (particularly small children) body mass indices.

*Training of trainers*

USAID-NFRP, in coordination with Hellen Keller International (HKI), has developed its training program and syllabus for the Nutrition and Hygiene component. HKI conducted the program's first training-of-trainers in April, covering the subjects of Essential Nutrition Actions (ENA) and Behavior Change Communication (BCC) for a total of 16 participants (14 community trainers, a nutrition coordinator and one program coordinator). USAID-NFRP and HKI have formalized the new training syllabus in a new manual and field flipchart co-produced by both organizations. In September, a second training-of-trainers was organized that covered the nutrition and hygiene training materials for the commercial agriculture participants (a new target group) and an additional component termed "home economics" that will serve to bridge the gap between increased household incomes (via commercial agriculture) and greater awareness of nutritional priorities (via nutrition and hygiene training), helping to ensure greater sustainability of both.

*Staff mobilization*

The 11 community trainers (CTs) are fully operational in all 15 worksite VDCs with each of them providing awareness education and training to 200 households on average. Similar to the field technicians of the commercial agriculture program, the CTs are stationed to live in the communities where they work and are provided management, technical and monitoring support by the Nutrition Coordinator and Regional Agricultural Manager.

*Nutrition action groups*

A total of 112 nutrition action groups (NAGs) were formed from the 2,259 participant households, each sharing common nurseries and working together to establish kitchen gardens.

*Training nutrition action groups*

Community trainers provide regular follow up visits and on-site trainings to ensure that NAG members are properly applying the skills they have learned from their trainings in essential nutrition actions and behavior change communication.

The nutrition and hygiene training typically reserved by USAID-NFRP for the kitchen garden beneficiaries is also being provided to the 3,143 commercial farmers and their families mentioned above.

*Kitchen garden management and harvesting*

All 2,259 kitchen gardens completed harvests by September and the results are reported in the following section.

*Mobilization of input services (agro-vets)*

USAID-NFRP identified 85 agro-vets that are potentially accessible to kitchen gardeners and profiles were developed for each. Field staff will continue to work with kitchen gardeners, women's groups and local agro-vets to improve their long term linkages.

*Monitoring and Outreach*

Orientations have been provided to all CTs in USAID-NFRP's methods for data collection and monitoring. Monthly review meetings to ensure accurate tracking of progress in nutrition and hygiene indicators continue throughout the life of the program.

## 2.4 CHALLENGES

The unexpected and torrential rainfall in late August hindered the transplanting of vegetable crops in Kailali and Kanchanpur and obstructed the growth of cauliflower in Dadeldhura.

Plant parasites root rot nematodes (Meloidogyne) appeared in Kailali and Kanchanpur worksites causing some damage to cauliflower and cabbage seedlings in nurseries. In order to minimize the incidence of nematode, farmers were trained in pest management to control the infestation through bio-chemicals such as *Calotropis gigantean* and *Azadirachta indica*.

# SECTION 3: RESULTS

## 3.1 PROGRESS TO DATE

By September 2011, 858,869 people had directly benefitted from project-funded activities. A total of 837,726 benefitted from infrastructure projects, 7,578 benefitted from livelihood and income generation activities, 5,960 benefitted from sanitation, hygiene and nutrition trainings and kitchen gardening, 3,275 participated in trainings to strengthen local organizations, and 4,267 were trained under the protection of women and children component. A total of 119 community infrastructure projects were also completed, and 165,106 days of temporary employment were generated by infrastructure component activities. Total beneficiary investment (cost sharing) in project activities by individuals, communities, local governments and other donors was $370,394.

**Table 2: Progress to Date: Higher Level, Overall Program Indicators**

| Activity | Target | Achieved to Date | Balance | Completion Rate |
|---|---|---|---|---|
| Number of direct beneficiaries of USG-funded interventions | 955,867 | **858,869** | 96,998 | 90% |
| Number of community infrastructure projects constructed and/or rehabilitated | 144 | **119** | 25 | 83% |
| Number of individuals who have received USG supported training (all components) | 20,578 | **21,080** | (502) | 102% |
| Number of person-days of temporary employment generated by infrastructure activities | 178,736 | **165,106** | 13,630 | 92% |
| Cost sharing leveraged by individuals, communities, local governments and other donors | $480,843 | **$370,394** | $110,449 | 77% |

## 3.2 PROGRESS PER PROGRAM OBJECTIVE

### *3.2.1 Infrastructure*

In Phases I and II, USAID-NFRP committed $2,649,478 for 119 community infrastructure projects, all of which are complete. This has **directly benefitted 837,726 individuals** from flood-affected communities of the Terai and has **generated 165,106 days of paid skilled and unskilled labor,** resulting in a cash injection of more than **$330,000 into local economies**.

**Table 3: Phase I Results of Infrastructure program**

| Project Type | No. Projects | No. Complete | Beneficiaries (households) | Employment (person-days) | USAID-NFRP Assistance | Counterpart Contribution |
|---|---|---|---|---|---|---|
| Culverts and Bridges | 35 | 35 | 44,159 | 35,468 | $668,896 | $34,077 |
| Flood Controls | 28 | 28 | 4,822 | 52,138 | $584,462 | $50,045 |
| Schools | 14 | 14 | 3,564 | 30,385 | $448,149 | $46,100 |
| Public Bathrooms | 2 | 2 | 0 | 490 | $5,807 | $133 |
| Irrigation Rehab | 4 | 4 | 209 | 4,233 | $65,951 | $2,882 |
| Road Improvements | 2 | 2 | 3,369 | 3,795 | $41,255 | $2,503 |
| Health Post | 1 | 1 | 1,418 | 710 | $8,256 | $2,023 |
| **TOTAL** | **86** | **86** | **57,541** | **127,219** | **$1,822,777** | **$137,763** |

**Table 4: Phase II Results of Infrastructure program**

| Project Type | No. Projects | No. Completed | Beneficiaries (households) | | Employment (person-days) | USAID-NFRP Assistance | Counterpart Contribution |
|---|---|---|---|---|---|---|---|
| Bridges and Culverts | 18 | 18 | 36,641 | | 25,606 | $499,423 | $6,403 |
| Road improvements | 8 | 8 | 10,668 | | 10,575 | $252,954 | $5,231 |
| School desks and equipment | 1 | 1 | 3,564 | | 0 | $28,499 | $0 |
| Phase I improvements | | 3 | 3 | N/A | 516 | $13,847 | $0 |
| Markets | | 3 | 3 | 28,758 | 1,190 | $31,977 | $1,409 |
| **TOTAL** | | **33** | **33** | **71,340** | **37,887** | **$826,701** | **$13,043** |

The infrastructure component has benefited 128,881 households – 178 percent more than the target proposed in the approved Performance Monitoring Plan (PMP). This is largely because of the program's emphasis on cost-effective, high-impact projects that addressed common needs of communities and required considerable amounts of unskilled labor. This includes the building of bridges, large culverts, irrigation structures and schools.

USAID-NFRP built seven bridges and culverts and rehabilitated five flood damaged roads in three VDCs of Sunsari district. These projects directly benefit an estimated 7,364 households and improve the quality and accessibility of more than eight kilometers of local roads, 32 percent of the approximately 25 kilometers of local roads damaged by the Koshi flood.

Details of results to date are shown in Table 5, which is an excerpt from USAID-NFRP's PMP.

**Table 5: Excerpt from Infrastructure PMP**

| No. | Activity | Phase I & II Results | Phase III Targets | Total Targets | Results To Date | Completion Rate |
|---|---|---|---|---|---|---|
| **2. Objective 1: Rehabilitation and Rebuilding of Productive Infrastructure** | | | | | | |
| 2.1 | Number of community infrastructures constructed a/o rehabilitated | 119 | 25 | 144 | 119 | 83% |
| 2.1.1 | Number of classrooms constructed with USG assistance (Program Element IIP – 2.1 Basic Education) | 52 | 0 | 52 | 52 | 100% |
| 2.1.2 | Number of classrooms repaired with USG assistance (Program Element IIP – 2.1 Basic Education) | 4 | 0 | 4 | 4 | 100% |
| 2.1.3 | Number of model latrines in community schools | 2 | 0 | 2 | 2 | 100% |
| 2.1.5 | Number of community irrigation systems rehabilitated | 5 | 0 | 5 | 5 | 100% |
| 2.1.6 | Number of river protection projects (e.g. embankment protections, gabions, spurs, check dams) | 30 | 0 | 30 | 30 | 100% |
| 2.1.7 | Kilometers of transportation infrastructure constructed or repaired through USG assistance (Program Element EG 4.3 Transport Services) | 17 | 0 | 17 | 17 | 100% |
| 2.1.8 | Number of transportation infrastructure projects such as culverts and small bridges constructed or repaired | 53 | 0 | 53 | 53 | 100% |
| 2.3 | Number of people benefiting from USG sponsored transportation infrastructure projects (Program Element EG 4.3 Transport Services) | 562,549 | 0 | 562,549 | 562,549 | 100% |

**Table 5: Excerpt from Infrastructure PMP**

| No. | Activity | Phase I & II Results | Phase III Targets | Total Targets | Results To Date | Completion Rate |
|---|---|---|---|---|---|---|
| **2. Objective 1: Rehabilitation and Rebuilding of Productive Infrastructure** | | | | | | |
| 2.4 | Number of households benefited by community infrastructure projects (assumes an average of 150 benefiting HHs per VDC) | 128,881 | 15,000 | 143,881 | 128,881 | 90% |
| 2.5 | Number of person-days of temporary employment generated by infrastructure activities (estimated at 15% of construction costs) | 165,106 | 13,630 | 178,736 | 165,106 | 92% |
| 2.6 | Subcontract funds disbursed (in USD) | $2,665,027 | $220,000 | $2,885,027 | $2,665,027 | 92% |
| 2.7 | Cost sharing leveraged from communities, local governments a/o other donor programs (in USD) | $150,806 | $12,449 | $163,255 | $150,806 | 92% |

**Phase III**

USAID-NFRP is continuing to focus exclusively on rehabilitating or building productive infrastructure that directly supports and complements the economic development efforts of the agricultural beneficiaries. The target for this component is 25 productive infrastructure projects throughout the original and new VDCs of Kailali, Kanchanpur and Dadeldhura districts. This figure is based on a tentative estimate of 20 market shed/collection centers and five surface irrigation rehabilitations. All feasibility studies and project designs were completed for the five surface irrigation systems in Dadeldhura and construction begins in late October, after the Dashain holidays.

### *3.2.2 Livelihoods and Income Generation/Commercial Agriculture*

**Phase I**

USAID-NFRP completed the full set of training and assistance activities for the 2,164 participants of Phase I by June 2010. Based on the final data collected from all farmers on yields, production costs, gross sales and incomes over three program-supported crop cycles, farmers generated a value of **$2.4 million in net sales** (income). With an investment of $409,000, this means that in less than 18 months farmers earned six dollars in income for every dollar invested by the program. This translates to a nearly sevenfold increase in the economic productivity of their land, represented by a 686 percent increase in net sales per hectare. Farmers contributed an average of 0.22 hectares to the demonstration program and their average earned income during the 18 months was $1,111.

**Table 6: Phase I Results of LIG program**

| No. | Indicator/Activity | Target | Results To-Date | Completion Rate |
|---|---|---|---|---|
| 1 | Long-term participants over 3 crop cycles (18-months) | 1,200 | 2,164 | 180% |
| 2 | Hectares of productive land directly assisted by LIG | 480 | 479 | 100% |
| 3 | Shallow tube wells and motorized pumps installed | 300 | 362 | 121% |
| 4 | Treadle pumps installed | 300 | 240 | 80% |
| 5 | Drip irrigation sets installed | 0 | 25 | n/a |
| 6 | Net sales for participants in first crop cycle | $273,333 | $581,756 | 213% |
| 7 | Net sales for participants in second crop cycle | $273,333 | $438,744 | 161% |
| 8 | Net sales for participants in third crop cycle | $273,333 | $1,383,238 | 506% |
| **9** | **Total net sales over three crop cycles (i.e. income)** | $820,000 | **$2,403,738** | 293% |

| | | | | |
|---|---|---|---|---|
| **10** | **Percentage increase in net sales per hectare of land (3 crop cycles)** | 300% | **686%** | 229% |

The significant gains made in the first and second crop cycles were overshadowed by the outstanding results of the third as farmers tripled their economic productivity despite not receiving any cost-shared inputs from USAID-NFRP. This was a built-in requirement to test the sustainability of the intervention by demonstrating that farmers have earned enough capital in the first two cycles to not require further financial assistance in order to sustain their productivity. The impressive results can be attributed to three key factors:

- **Reliable, year round irrigation** – The expanded use of shallow tube wells with motorized pumps is essential to enhancing agricultural productivity in the Terai.
- **Consolidation of commodities** – The program supported farmers in consolidating production to achieve the highest net returns on commodities with the greatest potential in local markets.
- **Effective crop planning** – Selecting the right commodity also requires properly timing its production. After two cycles of trial and error, farmers adjusted production accordingly and achieved profits in the third cycle that were substantially higher than before.

**Increased demand for local labor**: According to an extensive field survey conducted at the end of Phase I, 66 percent of all participating households utilized paid labor for the transplanting, harvesting and transportation of their products. The program had generated an estimated 76,781 person-days of temporary employment (52 percent women), equal to $153,000 of cash injected into local economies.

**Improved food security**: The improvements in farmers' incomes and increased productivity of high-value (and nutritious) food have had a dramatic impact on improving the food security of beneficiary households. A study conducted in October 2010 on beneficiary household food consumption confirmed that family-level nutrition was improving as a result of the program's impact. However, the primary source of that improvement was the extra income that could pay for food, rather than the types of production on farmers' land. The study also measured the indirect benefits to the general public benefits as nutritious food becomes more abundantly available in local communities and markets. In many cases, it was demonstrated that often the only source of nutritious vegetables in local markets were the LIG farmers of nearby communities.

**Diffusion effect**: The 2,164 farmers under Phase I increased their land under production by an average of 20 percent without assistance. Another 1,538 unassisted farmers on 183 hectares of land also adopted the practices and technologies of their neighbors and are now producing high-value crops.

### Phase II

Program assistance and field monitoring activities for the 2,271 participant farmers on 490 hectares of demonstration plots concluded in June 2011. As in the previous phase, farmers completed six all-day field trainings, attended one interactive field day and received approximately 20 monitoring visits from LIG technicians for each of the three crop cycles.

Final data collected from all farmers on yields, production costs, gross sales and incomes over the three crop cycles indicates that farmers generated a total value of **$2.2 million in net sales (income)**. Economic productivity increased by 645 percent (on average), however, the trend continues to show an increase in productivity over each progressive crop cycle.

| **Table 7: Phase II Results of LIG program** | | | | |
|---|---|---|---|---|
| **No.** | **Indicator/Activity** | **Target** | **Results To-Date** | **Completion Rate** |
| 1 | Long-term participants over 3 crop cycles (18-months) | 2,200 | 2,271 | 103% |
| 2 | Hectares of productive land directly assisted by LIG | 490 | 487 | 99% |
| 3 | Shallow tube wells and motorized pumps installed | 348 | 324 | 93% |
| 4 | Net sales for participants in first crop cycle | $273,333 | $519,562 | 190% |
| 5 | Net sales for participants in second crop cycle | $273,333 | $733,944 | 269% |
| 6 | Net sales for participants in third crop cycle | $273,333 | $950,375 | 348% |
| 7 | Total net sales over three crop cycles (i.e. income) | $820,000 | $2,203,881 | 269% |
| 8 | Percentage increase in net sales per hectare of land | 300% | 645% | 215% |

Although the overall results for the LIG program in Phase II were strong and exceeded expectations, the final outcome of the third crop cycle in Sunsari was disappointing. Sunsari farmers continued to maintain higher levels of production, both in yields and net sales, as compared to their baseline status, but they substantially dropped from what had been achieved in the second crop cycle. This shift in farmers' commitment was studied in the field by the USAID-NFRP team and can be explained by the following:

- Continued high dependency on government and donor-led assistance in the flood affected area causes farmers to be reluctant in showing any progress that might imply they are in better conditions than their neighbors. Often, limited farm production is the best way to demonstrate a continued 'need' for assistance. In a number of cases, farmers rejected the cost-shared inputs provided by the program in the third crop cycle, despite their understanding of the obvious economic benefits.

- Indiscriminant distribution of cereal seed crops by the FAO, ADB and Department of Agriculture resulted in many farmers (more than 30 percent in the third crop cycle) rejecting the option of paying for vegetable seeds, despite the superior economic returns. Production of cereals versus the high value crops promoted by USAID-NFRP will dramatically reduce the overall returns to farmers.

- Post-disaster mentality causes farmers to be extremely risk adverse. It was confirmed during the field interviews that farmers will intuitively elect essential staple crops such as rice and maize over vegetables that require more advanced marketing capacity.

- High levels of sand deposits on crops due to heavy winds, damage to roads and fields, and water logging continue to inhibit production and access to inputs and services.

Although USAID-NFRP primarily supports the promotion of high value vegetables, a certain degree of cereal crop production was also supported to ensure responsiveness to farmer demand and needs. Many farmers, especially those in the Terai, are not able to produce vegetables during the monsoon season as the flooding and water logging only permits rice paddy production. USAID-NFRP used this reality as an opportunity to grow early harvest rice varieties that allowed farmers to bring

their product to market before the traditional rice season and subsequently grow vegetables during the late monsoon season.

### Phase III – Commercial Agriculture

USAID-NFRP is providing technical assistance and appropriate technologies to a total of 3,143 farmers on 749 hectares of demonstration plots in 29 VDCs. Nurseries were established for the entire coverage area by July, and transplanting was completed by September.

**Table 8: Area under Production per Crop - First Crop Cycle**

| No. | Crop | Ha under Production - Kailali/ Kanchanpur | Ha under Production - Dadeldhura | TOTAL Hectares |
|---|---|---|---|---|
| 1 | Bean | 0.0 | 12.3 | 12.3 |
| 2 | Capsicum | 0.0 | 1.4 | 1.4 |
| 3 | Cucumber | 0.0 | 0.1 | 0.1 |
| 4 | Potato | 0.0 | 0.1 | 0.1 |
| 5 | Cauliflower | 125.3 | 28.3 | 153.6 |
| 6 | Cabbage | 73.9 | 20.8 | 94.7 |
| 7 | Tomato | 101.0 | 12.0 | 113.0 |
| 8 | Chili | 131.7 | 8.7 | 140.4 |
| 9 | Eggplant | 28.5 | 0.90 | 29.4 |
| 10 | Radish | 26.4 | 9.4 | 35.8 |
| 11 | Cowpea | 3.5 | 0.3 | 3.8 |
| **HVC Subtotal** | | **490.3** | **94.1** | **584.4** |
| 12 | Maize | 0.0 | 5.6 | 5.6 |
| 13 | Rice | 153.3 | 5.5 | 158.8 |
| **Cereal Subtotal** | | **153.3** | **11.1** | **164.4** |
| **TOTAL** | | **643.7** | **105.1** | **748.8** |

Early harvests began in July and preliminary yields and sales data are now available for a limited number of farmers' plots.

**Table 9: Preliminary Results on First Crop Cycle Rice Production**

| District | VDC | Rice Variety: Radha 4 | | Rice Variety: Hardinath | | TOTAL | |
|---|---|---|---|---|---|---|---|
| | | Area (Ha) | Yield (kg/Ha) | Area (Ha) | Yield (kg/Ha) | Area (Ha) | Yield Average (kg/Ha) |
| Kanchanpur | Daiji | 9.2 | 3,705 | 6.7 | 4,142 | 15.9 | 3,923 |
| | Pipaladi | 6.6 | 3,665 | 6.6 | 3,791 | 13.2 | 3,728 |
| | Suda | 9.6 | 4,259 | 4.9 | 4,515 | 14.5 | 4,387 |
| **TOTAL** | | **25.4** | **3,876** | **18.2** | **4,149** | **43.6** | **4,013** |

**Table 10: First Crop Cycle Production and Income Results on 39.5 hectares in Dadeldhura**

| No. | Crop | Area (Ha) | Production (kg) | Yield per Ha | Gross Income (NRs.) | Cost of Production (NRs.) | Net Sales Value (NRs.) | Net Income per Hectare (NRs.) |
|---|---|---|---|---|---|---|---|---|
| 1 | Bean | 3.0 | 20,421 | 6,922 | 487,367 | 91,895 | 395,472 | 134,058 |
| 3 | Eggplant | 0.2 | 1,200 | 6,000 | 20,073 | 3,516 | 16,557 | 82,785 |
| 3 | Cabbage | 5.2 | 67,237 | 13,056 | 932,546 | 147,921 | 784,625 | 152,354 |
| 4 | Capsicum | 1.3 | 2,303 | 1,842 | 68,009 | 5,228 | 62,781 | 50,225 |
| 5 | Cauliflower | 18.6 | 69,727 | 3,751 | 1,541,354 | 225,218 | 1,316,136 | 70,798 |
| 6 | Chili | 1.2 | 5,355 | 4,463 | 110,952 | 17,082 | 93,870 | 78,225 |
| 7 | Cowpea | 1.7 | 12,479 | 7,172 | 508,088 | 32,445 | 475,643 | 273,358 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 9 | Radish | 1.7 | 13,168 | 7,981 | 158,901 | 39,899 | 119,002 | 72,122 |
| 10 | Tomato | 5.2 | 48,984 | 9,420 | 653,676 | 162,137 | 491,539 | 94,527 |
| **Grand Total** | | **39.5** | **244,179** | **N/A** | **4,480,966** | **N/A** | **3,755,625** | **N/A** |

In addition, 105 shallow tube wells with improved motorized pumps were installed and operational by the end of September. Farmers' contribution for the cost of the wells and pumps, which includes 40 percent of the installation plus tools and construction of a protective shed, has been impressive. The remaining installations will be completed in November.

**Table 11: Progress in Commercial Agriculture program - Phase III**

| No. | Indicator/Activity | Target | Results To-Date | Completion Rate |
|---|---|---|---|---|
| 1 | Long-term participants over 3 crop cycles (18-months) | 2,700 | **3,143** | 116% |
| 2 | Hectares of productive land directly assisted by LIG | 800 | **749** | 94% |
| 3 | Shallow tube wells and motorized pumps installed | 157 | 105 | 67% |
| 4 | Net sales for participants in first crop cycle | $1,066,667 | *in progress* | *in progress* |
| 5 | Net sales for participants in second crop cycle | $1,066,667 | TBD | TBD |
| 6 | Net sales for participants in third crop cycle | $1,066,667 | TBD | TBD |
| 7 | Total net sales over three crop cycles (i.e. income) | $3,200,000 | TBD | TBD |
| 8 | Percentage increase in net sales per hectare of land | 300% | TBD | TBD |

### *3.2.3 Sanitation, Hygiene and Nutrition*

Activities under Phase I ended in late 2009, with 3,061 beneficiaries trained, including 1,078 women and 1,521 children. USAID-NFRP field technicians are conducting a survey to evaluate the program's effectiveness at engendering positive changes to improve hygiene and nutrition.

**Table 12: Phase I Results of SHN awareness trainings**

| Indicator | Adult | | | Children | | |
|---|---|---|---|---|---|---|
| | Men | Women | Total | Boys | Girls | Total |
| Trained participants | 462 | 1,078 | **1,540** | 678 | 843 | **1,521** |
| Progress in 1st round of training (3 days) | **100%** | | | **100%** | | |
| Progress in 2nd round of training (3 days) | **100%** | | | **100%** | | |

Phase II training began in March 2010 for 640 beneficiaries and concluded in September 2010.

**Table 13: Phase II Results of SHN awareness trainings**

| Indicator | Adult | | | Children | | |
|---|---|---|---|---|---|---|
| | Men | Women | Total | Male | Female | Total |
| Target for Trained Participants | 120 | 180 | **300** | 120 | 180 | **300** |
| Results To Date | 116 | 212 | **328** | 117 | 195 | **312** |
| Percent Progress | 97% | 118% | **109%** | 98% | 108% | **104%** |

Under Phase I, USAID-NFRP installed 1,229 improved cooking stoves (ICS) and trained each household how to use and maintain the stoves. The stoves keep homes clean and smoke-free,

reduce cooking time, and use less firewood. In some villages, households not involved in the program have built their own improved cooking stoves.

**Table 14: Phase I Results of Improved Cooking Stoves**

| No. | Activity | Target | Results To-Date | Completion Rate |
|---|---|---|---|---|
| 1 | Community-level promoters trained | 60 | 60 | 100% |
| 2 | Households trained and assisted with ICSs | 600 | 1,229 | 205% |

Under Phase II, 12 community-level promoters and 649 individuals have been trained in ICS construction, operation and maintenance. USAID-NFRP completed the installation of 486 stoves in the 12 VDC worksites, surpassing the original target by 246 stoves.

**Table 15: Phase II Results of Improved Cooking Stoves and Household Latrines**

| No. | Indicator/Activity | Target | Results To-Date | Completion Rate |
|---|---|---|---|---|
| 1 | Community-level promoters trained | 12 | 12 | 100% |
| 2 | Households trained in ICS construction and maintenance | 240 | 649 | 270% |
| 3 | Households assisted with ICSs | 240 | 486 | 203% |
| 4 | Households assisted with Private Latrines | 240 | 240 | 100% |

All 1,237 kitchen gardens under Phase I were established in the first quarter of 2009 and USAID-NFRP finished its oversight and technical assistance in February 2010. Surveys conducted by the social inclusion team indicate that 65 percent of kitchen garden beneficiaries used their entire harvests for household consumption. The remaining 35 percent used the majority of their harvests for consumption and sold the surplus for additional household income.

**Table 16: Phase I Results of Kitchen Gardening**

| No. | Activity | Target | Results To Date | Completion Rate |
|---|---|---|---|---|
| 1 | Households assisted and trained during 2 crop cycles | 600 | 1,290 | 215% |
| 2 | Hectares of productive land directly assisted by the kitchen garden program | 20 | 41 | 205% |
| 3 | Percent of kitchen garden beneficiaries that continue to eat a minimum of five meals per week with green/leafy vegetables | 80% | TBD | TBD |

**Table 17: Phase II Results of Kitchen Gardening**

| No. | Indicator/Activity | Target | Results To-Date | Completion Rate |
|---|---|---|---|---|
| 1 | Households assisted and trained in kitchen gardening | 480 | 968 | 202% |
| 2 | Community vegetable nurseries established | 24 | 24 | 100% |
| 3 | Hectares of productive land directly assisted by kitchen garden program | 16 | 32.3 | 202% |
| 4 | Fruit saplings planted (lemon, litchi, guava, papaya, pomegranate) | 6,000 | 6,000 | 100% |
| 5 | Percent of kitchen garden beneficiaries that continue to eat a minimum of five meals per week with green/leafy vegetables | 80% | TBD | TBD |

### Phase III – Nutrition and Hygiene

The activities conducted under Phase III represent a modified version of the original SHN program of Phases I and II. There is now much greater emphasis given to measurably improving the nutritional indicators within beneficiary households. Program assistance will also be extended exclusively to households with pregnant women or children less than 24 months of age. By September, 2,259

households (1,620 women-led) in 15 VDCs in Kailali and Kanchanpur were trained in the nutrition awareness program and had established, managed and harvested their 333 square meter kitchen gardens that covered a total of 72 hectares of productive land.

The following table details the total output achieved by USAID-NFRP's kitchen gardeners. Twenty-two percent of the total production (in kilograms) was not consumed by the beneficiary household and was sold in local markets, providing modest contributions to household incomes.

**Table 18: First Crop Cycle Kitchen Garden Production (Phase III)**

| No. | Crop | Total Production (kg) | Land Area | Total Consumption (kg) | Surplus Production (kg) |
|---|---|---|---|---|---|
| 1 | Okra | 122,140 | 9.07 | 88,033 | 34,107 |
| 2 | Cowpea | 112,145 | 9.07 | 78,461 | 33,684 |
| 3 | Cucumber | 129,365 | 9.07 | 97,586 | 31,779 |
| 4 | Bottle gourd | 148,504 | 9.07 | 107,866 | 40,638 |
| 5 | Bitter gourd | 83,032 | 9.07 | 73,663 | 9,369 |
| 6 | Sponge gourd | 129,660 | 9.07 | 91,332 | 38,328 |
| 7 | Pumpkin | 81,747 | 9.07 | 80,787 | 960 |
| 8 | Amaranthus | 77,081 | 9.07 | 73,937 | 3,144 |
| **TOTAL** | | **883,674** | **72** | **691,665** | **192,009** |

**Table 19: Progress in Nutrition and Hygiene program - Phase III**

| No. | Indicator/Activity | Target | Results To-Date | Completion Rate |
|---|---|---|---|---|
| 1 | Number of people trained in improved sanitation, hygiene and nutrition | 2,200 | **2,259** | 101% |
| 2 | Number of households with improved nutrition due to demonstration kitchen gardens | 2,200 | **2,259** | 101% |

### *3.2.4 Strengthening Local Organizations*

The Phase I training program in community development, youth leadership and disaster preparedness and management for 60 CBOs and 60 youth clubs concluded in February 2010. 1,218 adults and 1,218 youths were trained in organizational planning, leadership development, conflict resolution, community planning and assistance leveraging, networking and teamwork skills development, and development of community-based change agents. The youth clubs also organized and completed 60 community service projects. CBOs and youth clubs received basic supplies and equipment to establish offices and prepare for future floods.

**Table 20: Phase I Results of Strengthening Local Organizations**

| No. | Indicator/Activity | Target | Results To-Date | Completion Rate |
|---|---|---|---|---|
| 1 | Participants trained in community development program | 1,200 | 1,218 | 102% |
| 2 | Community-based organizations trained and assisted | 60 | 60 | 100% |
| 3 | Participants trained in youth leadership program | 1,200 | 1,218 | 102% |
| 4 | Youth clubs trained and assisted | 60 | 60 | 100% |
| 5 | Community service projects implemented | 60 | 60 | 100% |
| 6 | Participants trained in disaster management and prevention | 1,200 | 1,227 | 102% |
| 7 | Disaster preparedness committees organized | 60 | 60 | 100% |

| Table 20: Phase I Results of Strengthening Local Organizations | | | | |
|---|---|---|---|---|
| **No.** | **Indicator/Activity** | **Target** | **Results To-Date** | **Completion Rate** |
| 8 | Basic disaster response and first aid supplies distributed | 60 | 60 | 100% |

Disaster preparedness and management training under Phase II started in March 2010 for 326 members of the 12 targeted CBOs. Each group received an in-kind donation of critical first aid and early response supplies to effectively respond to local crises caused by flooding. The trainings in youth leadership and community development were carried out from July 2010 to January 2011 with the completion of community service projects by each participating youth club. USAID-NFRP also initiated a young women's football program in the 12 VDCs of Kailali and Kanchanpur. 264 young women participated in the four-month program that culminated in an inter-VDC tournament in January 2011 with teams from each of the 12 VDCs.

| Table 21: Phase II Results of Strengthening Local Organizations | | | | |
|---|---|---|---|---|
| **No.** | **Indicator/Activity** | **Target** | **Results To-Date** | **Completion Rate** |
| 1 | Participants trainees in community development program | 240 | 254 | 106% |
| 2 | Community-based organizations trained and assisted | 12 | 12 | 100% |
| 3 | Participants trainees in youth leadership program | 240 | 249 | 104% |
| 4 | Youth clubs trained and assisted | 12 | 12 | 100% |
| 5 | Community service projects implemented | 12 | 12 | 100% |
| 6 | Participants trained in disaster mgmt/prevention program | 240 | 326 | 136% |
| 7 | Disaster preparedness/mgmt committees organized | 12 | 12 | 100% |
| 8 | Basic disaster response and first aid supplies distributed | 12 | 12 | 100% |
| 9 | Formation of Young Women's Football Teams | 12 | 12 | 100% |
| 10 | Training/coaching of Young Women's Football Teams | 192 | 264 | 138% |

Details of results to date are shown in Table 22, which is an excerpt from USAID-NFRP's PMP.

| Table 22: Excerpt from Strengthening Local Organizations PMP | | | | | | |
|---|---|---|---|---|---|---|
| **No.** | **Activity** | **Phase I & II Results** | **Phase III Targets** | **Total Targets** | **Results To Date** | **Completion Rate** |
| **5. Objective 4: Strengthening of Local Peace Committees or Other Local Groups** | | | | | | |
| 5.1 | Number of groups receiving institutional strengthening and organizational development technical assistance and training | 144 | 0 | 144 | 144 | 100% |
| 5.2 | Number of community members trained | 3,275 | 0 | 3,275 | 3,275 | 100% |
| | Number of women trained | 1,773 | 0 | 1,773 | 1,773 | 100% |
| | Number of youth trained | 1,767 | 0 | 1,767 | 1,767 | 100% |
| 5.3 | Subcontract funds disbursed (in USD) | $147,002 | $0 | $147,002 | $147,002 | 100% |
| 5.4 | Cost sharing leveraged (10% minimum, in USD) | $0 | $0 | $0 | $0 | N/A |

### *3.2.5 Protection of Women and Children*

Activities under Phase I ended in February 2010. Trainings emphasized the promotion of gender rights and equality, and the prevention and control of human trafficking and discriminatory practices toward youth, women and vulnerable castes and ethnic groups.

| Table 23: Phase I Results of Protection of Women and Children | | | | |
|---|---|---|---|---|
| **No.** | **Indicator/Activity** | **Target** | **Results To-Date** | **Completion Rate** |
| 1 | Young women trained in Basic Life Options methodology | 1,200 | 1,333 | 111% |
| 2 | BLOP sessions completed per VDC (average) | 60 | 60 | 100% |
| 3 | Adults trained in REFLECT methodology | 1,800 | 1,728 | 96% |
| 4 | REFLECT sessions completed per VDC (average) | 60 | 60 | 100% |

Phase II training activities started in March 2010 for 604 young women from the 12 target VDCs in Kailali and Kanchanpur and concluded in December 2010. 602 parents were also oriented on the objectives and modalities of the program.

Details of results to date are shown in Table 24, which is an excerpt from USAID-NFRP's PMP.

| Table 24: Phase II Results of Protection of Women and Children | | | | |
|---|---|---|---|---|
| **No.** | **Indicator/Activity** | **Target** | **Results To-Date** | **Completion Rate** |
| 1 | Young women participating in Basic Life Options methodology | 480 | 604 | 126% |
| 2 | Adults oriented on BLOP contents and objectives | 240 | 602 | 251% |

| Table 25: Excerpt from Protection of Women and Children PMP | | | | | | |
|---|---|---|---|---|---|---|
| **No.** | **Activity** | **Phase I & II Results** | **Phase III Targets** | **Total Targets** | **Results To Date** | **Completion Rate** |
| **6. Objective 5: Protection of Women and Children** | | | | | | |
| 6.1 | Number of people trained | 4,267 | 0 | 4,267 | 4,267 | 100% |
| | Number of women trained | 3,641 | 0 | 3,641 | 3,641 | 100% |
| | Number of youth trained | 1,937 | 0 | 1,937 | 1,937 | 100% |
| 6.2 | Number of women and youth organizations strengthened (assumes one group per VDC) | 72 | 0 | 72 | 72 | 100% |
| 6.3 | Number of people trained in Trafficking-in-person related issues with USG assistance (Program Element PS5.3 – Trafficking-in-Persons and Migrant Smuggling) | 4,329 | 0 | 4,329 | 4,329 | 100% |
| 6.4 | Subcontract funds disbursed (in USD) | $26,746 | $0 | $26,746 | $26,746 | 100% |
| 6.5 | Cost sharing leveraged (10% minimum, in USD) | $0 | $0 | $0 | $0 | N/A |

*Gender Mainstreaming* – USAID-NFRP has emphasized the importance of women's participation in all program activities by focusing on empowering women with equitable access to training, production, markets and income opportunities. Throughout the three phases, the program has ensured that at least 35 percent of all LIG/Commercial Agriculture participants are women with demonstrated leadership roles in their families and communities. In addition, 76 percent of all participants in the three social inclusion components were women.

# SECTION 4: PRIORITIES FOR NEXT QUARTER

Program activities follow USAID-NFRP's FY11 annual work plan. Highlighted activities include:

Infrastructure Component

- Continue to carry out groundwater installations
- Finalize the technical designs and costs for market and collection center construction
- Initiate construction of five surface irrigation systems in Dadeldhura

Commercial Agriculture Component

- Establish price and production information systems for farmers using SMS messaging and local radio broadcasts
- Determine crop coverage with farmers for second crop cycle
- Initiate voucher program with 15 local agro-vets for the sale and distribution of key inputs for USAID-NFRP farmers

Nutrition and Hygiene Component

- Complete nutrition and home economics training syllabus, manual and flipchart in coordination with Hellen Keller International
- Initiate nutrition awareness and home economics training for commercial agriculture farmers

# SECTION 5: MANAGEMENT REPORT

## 5.1 PROJECT STAFFING

No changes in personnel or other staffing issues.

## 5.2 EXPENDITURES TO DATE

On March 18, 2011 USAID-NFRP received an 18 month extension, until August 31, 2012, and a budget increase from $6,506,377 to $8,506,377. From program start to September 30, 2011, the program has used $7,065,339, or 83 percent of the USAID-NFRP contract budget.

## 5.3 MANAGEMENT ISSUES

Nothing to report.

# ANNEX I: SPOTLIGHT ANALYSIS

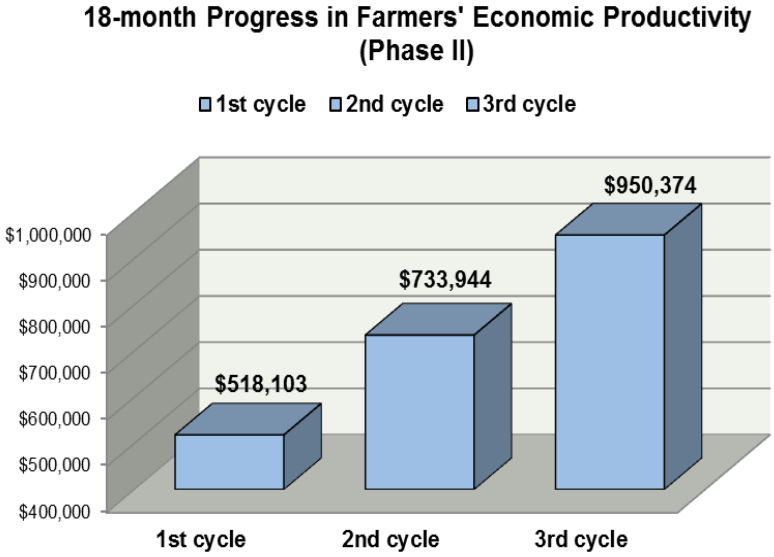
## RETURNS ON INVESTMENT

communities. This market in Dhangadi was built as part of USAID-NFRP's productive infrastructure component.

Returns on investment, or cost-benefit ratios, are effective ways to measure agricultural programs' impact. The United States Agency for International Development's Nepal Flood Recovery Program (USAID-NFRP) measures the program's investments against the farmers' net sales over three crop cycles in an intensive 18-month period of training and assistance.

Investments include everything expended and contracted by the program (salaries, transportation, logistics, supplies, training, and initial inputs including shallow tube wells, treadle pumps and seeds). USAID-NFRP farmers also cost share a significant amount of the initial investment. The project provides training and co-investment for each farmer, allowing them to increase productivity and incomes with high-value crops, while also requiring sufficient time and financial obligations to ensure sustainability. Most farmers will spend more in the first and second crop cycles than in any period before assistance. This is mainly due to new expenses like irrigation, or seeds and nursery supplies for high-value vegetables that are costlier than inputs for traditional staple crops. The willingness of farmers to invest indicates they expect positive returns, and also demonstrates their low risk as beneficiaries.

USAID-NFRP does not cost share any investment in the third crop cycle as part of the project's strategy to ensure sustainability. The higher upfront investment cost in the first cycle, due to training and technology grants, results in a low cost-benefit ratio, but by the third cycle this changes significantly as the project's investment declines and farmers' sales grow.




USAID-NFRP continues to expand its geographic and client coverage. Activities during Phases I and II were in direct response to serious flooding in several districts of the Terai. Phase III is focusing on broader objectives to improve food security, nutrition and incomes in preparation for funding from the Feed the Future initiative. In each progressive phase the agricultural programs have become more cost-effective as the project continues to improve its approach.

| **Phase I (May 2008-November 2009)** | |
|---|---|
| Total Budget | $420,000 |
| Number of Field Technicians | 22 |
| Hectares under Production | 479 |
| Number of Beneficiaries | 2,164 |
| Total Production (3 cycles) | 17,146,127 kg |
| Net sales earned | $2,403,738 |
| % increase in net sales per Ha | 686% |
| **Cost Benefit Ratio (18 months)** | **1 : 5.7** |

| **Phase II (December 2009-February 2011)** | |
|---|---|
| Total Budget | $320,000 |
| Number of Field Technicians | 32 |
| Hectares under Production | 487 |
| Number of Beneficiaries | 2,271 |
| Total Production (3 cycles) | 9,683,164 kg |
| Net sales earned | $2,203,881 |
| % increase in net sales per Ha | 686% |
| **Cost Benefit Ratio (18 months)** | **1 : 6.9** |

| **Phase III (March 2011-August 2012)** | |
|---|---|
| Total Budget | $490,000 |
| Number of Field Technicians | 33 |
| Hectares under Production | 750 |
| Number of Beneficiaries | 3,135 |
| Total Production (3 cycles) | TBD |
| Net sales earned *(estimate)* | $3,700,000 |
| % increase in net sales per Ha | TBD |
| **Cost Benefit Ratio (18 months)** *(estimate)* | **1 : 7.6** |

During the first two phases the average cost-benefit ratio was 1:6, meaning that farmers increased their net sales sixfold for every dollar of intervention by USAID-NFRP. Phase III, which began in March 2011, expects this ratio to increase to nearly 1:8. These types of increases are truly transformational in the lives of rural farmers.

For example, Sonu Tharu is now earning 6.3 times as much as he did before working with USAID-NFRP. Tharu received seeds, irrigation equipment and participated in seven core trainings per crop cycle. USAID-NFRP technicians visited his farm weekly to provide in-the-field training and ensure that he was applying the new technologies appropriately. Tharu co-invested $440 (NRs. 35,000) over three crop cycles and achieved more than $3,100 (NRs. 245,000) in net sales over the past 18 months as a result. This compares with the $495 (NRs. 39,000) he earned in net sales for a similar period before he joined the program.

With this extra income, Tharu paid back his loan, provided better education for his children and bought extra food for his family to enhance their overall food security. He also deposited a portion of his earnings in a savings account to use for farm expansion and other investments.

*Photo by Fintrac Inc.*

With help from USAID-NFRP, Sonu Tharu has dramatically increased his income and is able to provide a better life for his family.

To date, USAID-NFRP has supported 858,751 people in rural Nepalese communities with direct training or technical assistance, or through access to new or improved community infrastructure. By strengthening communities and stimulating growth across sectors, USAID-NFRP will have a lasting impact by lifting nearly one million Nepali people out of poverty.

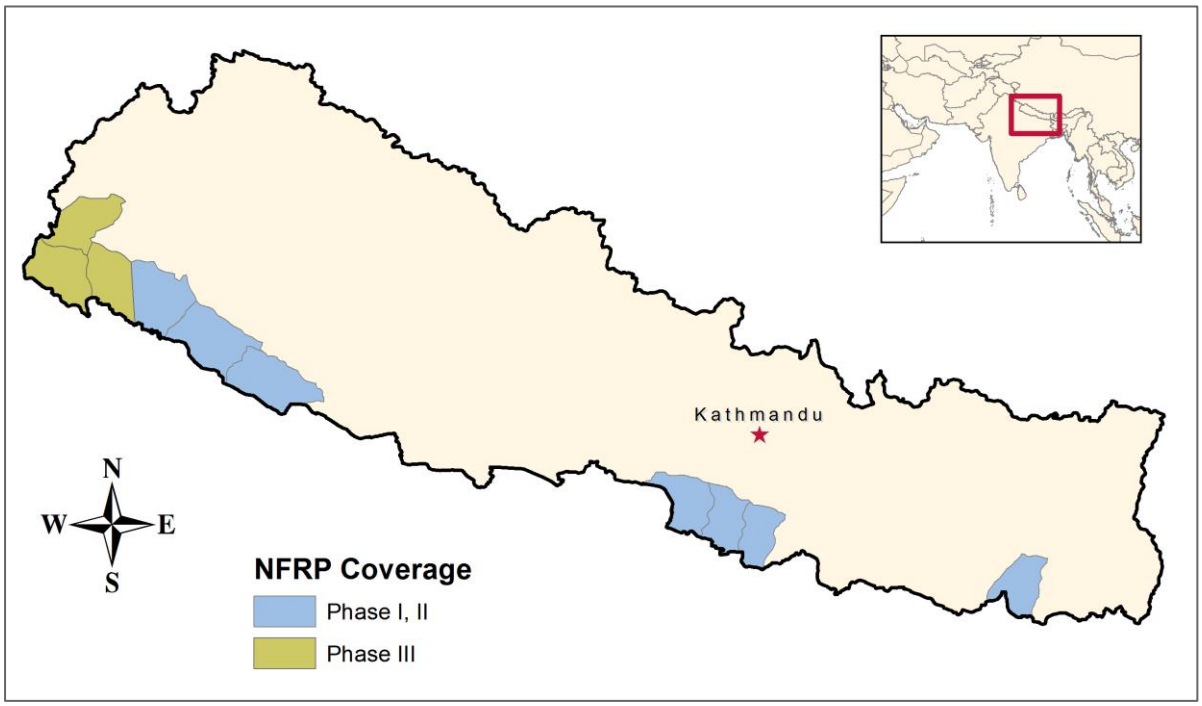
# ANNEX II: PERFORMANCE MONITORING PLAN

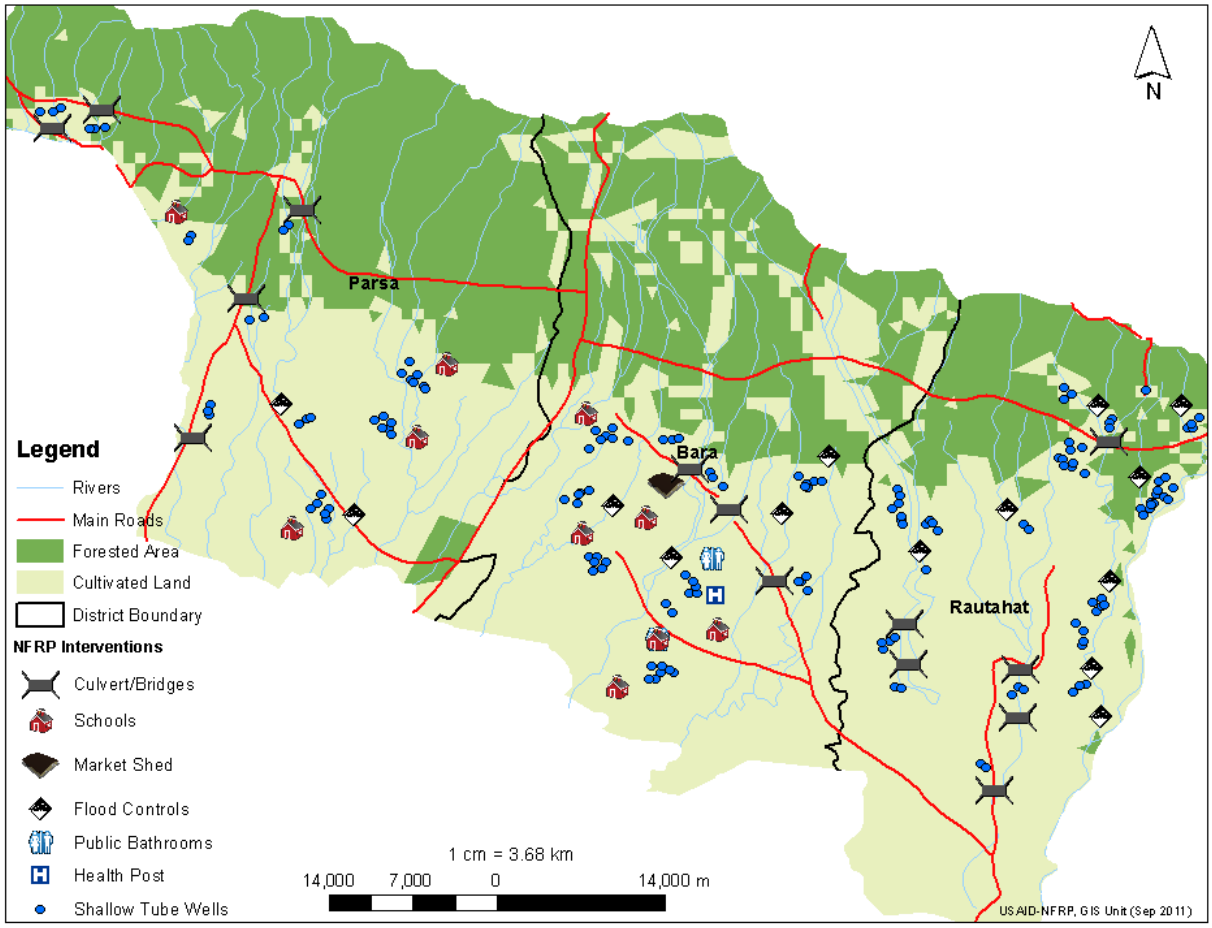
| No. | Activity | Phase I & II Results | Phase III Targets | Total Targets | Phase III Results | Results To Date | Completion Rate |
|---|---|---|---|---|---|---|---|
| **1. Program Level Objective** | | | | | | | |
| 1.1 | Number of beneficiaries assisted by USG-supported protection and solutions activities | 853,467 | 102,400 | 955,867 | 5,402 | 858,751 | 90% |
| **2. Objective 1: Rehabilitation and Rebuilding of Productive Infrastructure** | | | | | | | |
| 2.1 | Number of community infrastructures constructed a/o rehabilitated | 119 | 25 | 144 | 0 | 119 | 83% |
| 2.1.1 | Number of classrooms constructed with USG assistance (Program Element IIP – 2.1 Basic Education) | 52 | 0 | 52 | 0 | 52 | 100% |
| 2.1.2 | Number of classrooms repaired with USG assistance (Program Element IIP – 2.1 Basic Education) | 4 | 0 | 4 | 0 | 4 | 100% |
| 2.1.3 | Number of model latrines in community schools | 2 | 0 | 2 | 0 | 2 | 100% |
| 2.1.4 | Number of drinking water sources installed or improved | 0 | 0 | 0 | 0 | 0 | N/A |
| 2.1.5 | Number of community irrigation systems rehabilitated | 5 | 0 | 5 | 0 | 5 | 100% |
| 2.1.6 | Number of river protection projects (e.g. embankment protections, gabions, spurs, check dams) | 30 | 0 | 30 | 0 | 30 | 100% |
| 2.1.7 | Kilometers of transportation infrastructure constructed or repaired through USG assistance (Program Element EG 4.3 Transport Services) | 17 | 0 | 17 | 0 | 17 | 100% |
| 2.1.8 | Number of transportation infrastructure projects such as culverts and small bridges constructed or repaired | 53 | 0 | 53 | 0 | 53 | 100% |
| 2.2 | Number of people in target areas with access to improved drinking water supply as a result of USG assistance (Program Element IIP – 1.8 Clean Water and Sanitation Services) | 0 | 0 | 0 | 0 | 0 | N/A |
| 2.3 | Number of people benefiting from USG sponsored transportation infrastructure projects (Program Element EG 4.3 Transport Services) | 562,549 | 0 | 562,549 | 0 | 562,549 | 100% |
| 2.4 | Number of households benefited by community infrastructure projects (assumes an average of 150 benefiting HHs per VDC) | 128,881 | 15,000 | 143,881 | 0 | 128,881 | 90% |
| 2.5 | Number of person-days of temporary employment generated by infrastructure activities (estimated at 15% of construction costs) | 165,106 | 13,630 | 178,736 | 0 | 165,106 | 92% |
| 2.6 | Subcontract funds disbursed (in USD) | $2,665,027 | $220,000 | $2,885,027 | $0 | $2,665,027 | 92% |
| 2.7 | Cost sharing leveraged from communities, local governments a/o other donor programs (in USD) | $150,806 | $12,449 | $163,255 | $0 | $150,806 | 92% |

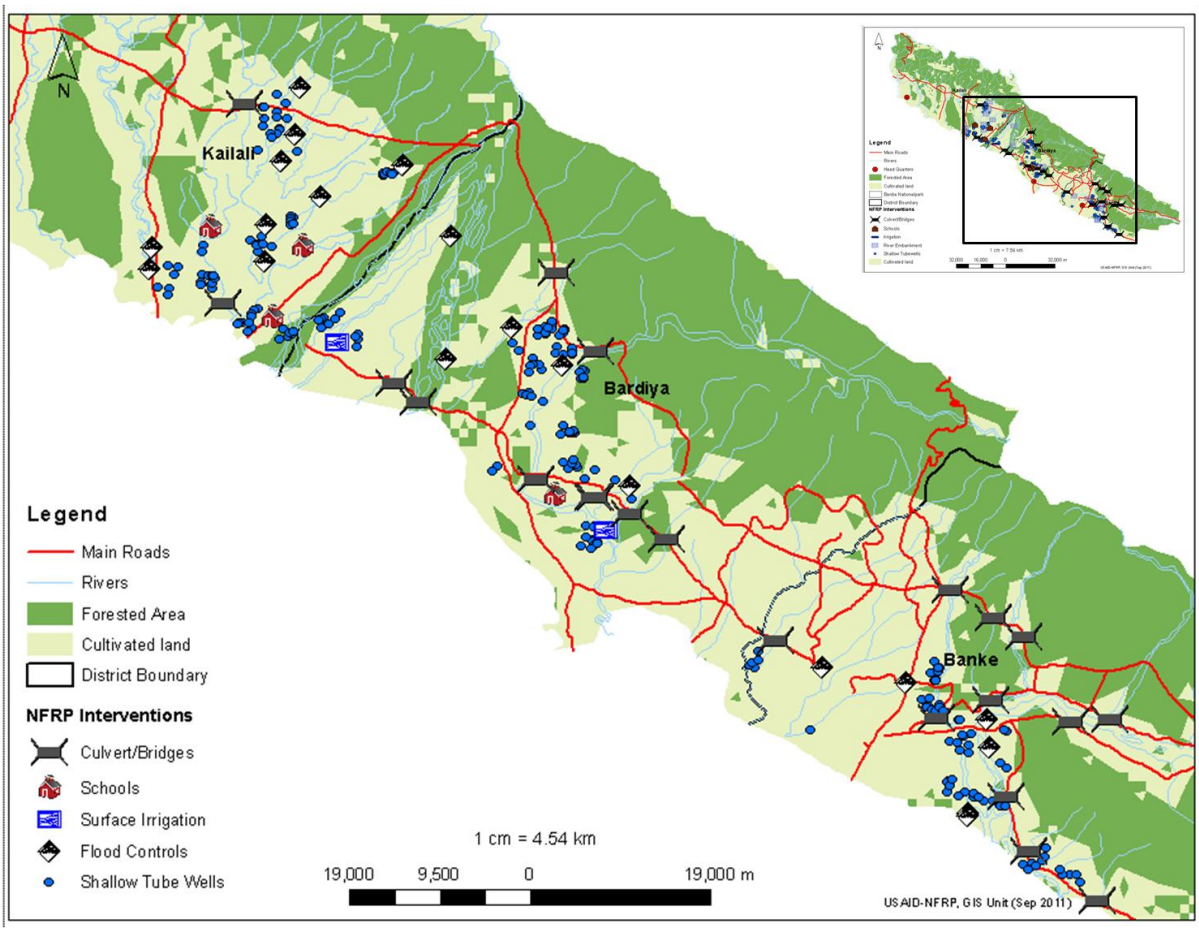
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **3. Objective 2: Provision of Income Generation Activities** | | | | | | | |
| 3.1 | Number of individuals who have received USG supported long term agricultural sector productivity training (EG 5.2 Agricultural Sector Productivity) | 4,435 | 2,700 | 7,135 | 3,143 | 7,578 | 106% |
| | Number of women trained | 1,330 | 945 | 2,275 | 1,070 | 2,400 | 105% |
| 3.2 | Number of rural households benefiting directly from USG interventions (EG 5.2 Agricultural Sector Productivity) | 4,435 | 2,700 | 7,135 | 3,143 | 7,578 | 106% |
| 3.3 | Number of vulnerable households benefiting directly from USG interventions (EG 5.2 Agricultural Sector Productivity) | 2,335 | 540 | 2,875 | 1,070 | 3,405 | 118% |
| 3.4 | Number of producers organizations, water users associations, trade and business associations receiving USG assistance (EG 5.2 Agricultural Sector Productivity) | 92 | 30 | 122 | 0 | 92 | 75% |
| 3.5 | Number of new technologies or management practices made available for transfer as a result of USG assistance (EG 5.2 Agricultural Sector Productivity) | 4,435 | 2,700 | 7,135 | 3,143 | 7,570 | 106% |
| 3.6 | Implementation funds disbursed (in USD) | $739,027 | $490,000 | $1,229,027 | $0 | $739,027 | 60% |
| 3.7 | Cost sharing leveraged by beneficiary farmers (25% of in-kind investment) | $182,848 | $98,000 | $280,848 | $0 | $182,848 | 65% |
| **4. Objective 3: Improved Sanitation, Hygiene and Nutrition (SHN)** | | | | | | | |
| 4.1 | Number of people in target areas with access to improved sanitation facilities as a result of USG assistance (Program Element IIP – 1.8 Clean Water and Sanitation Services) | 1,648 | 0 | 1,648 | 0 | 1,648 | 100% |
| 4.2 | Number of people trained in improved sanitation, hygiene and nutrition | 3,701 | 2,200 | 5,901 | 2,259 | 5,850 | 101% |
| 4.3 | Number of households with improved nutrition due to demonstration kitchen gardens | 2,258 | 2,200 | 4,458 | 2,259 | 4,407 | 101% |
| 4.4 | Number of households with improved sanitation due to improved cooking stoves | 1,715 | 0 | 1,715 | 0 | 1,715 | 100% |
| 4.6 | % increase in the incidence of hand-washing of SHN trainees | 80% | 80% | 85% | 0% | 1 | 94% |
| 4.7 | % of kitchen garden beneficiaries that continue to eat a minimum of five meals per week with green/leafy vegetables | 80% | 80% | 80% | 0% | 1 | 100% |
| 4.8 | Subcontract funds disbursed (in USD) | $258,695 | $80,000 | $338,695 | $0 | $258,695 | 76% |
| 4.9 | Cost sharing leveraged (15% minimum, in USD) | $36,740 | $0 | $36,740 | $0 | $36,740 | 100% |
| **5. Objective 4: Strengthening of Local Peace Committees or Other Local Groups** | | | | | | | |
| 5.1 | Number of groups receiving institutional strengthening and organizational development technical assistance and training | 144 | 0 | 144 | 0 | 144 | 100% |
| 5.2 | Number of community members trained | 3,275 | 0 | 3,275 | 0 | 3,275 | 100% |
| | Number of women trained | 1,773 | 0 | 1,773 | 0 | 1,773 | 100% |
| | Number of youth trained | 1,767 | 0 | 1,767 | 0 | 1,767 | 100% |
| 5.3 | Subcontract funds disbursed (in USD) | $147,002 | $0 | $147,002 | $0 | $147,002 | 100% |
| 5.4 | Cost sharing leveraged (10% minimum, in USD) | $0 | $0 | $0 | $0 | $0 | N/A |

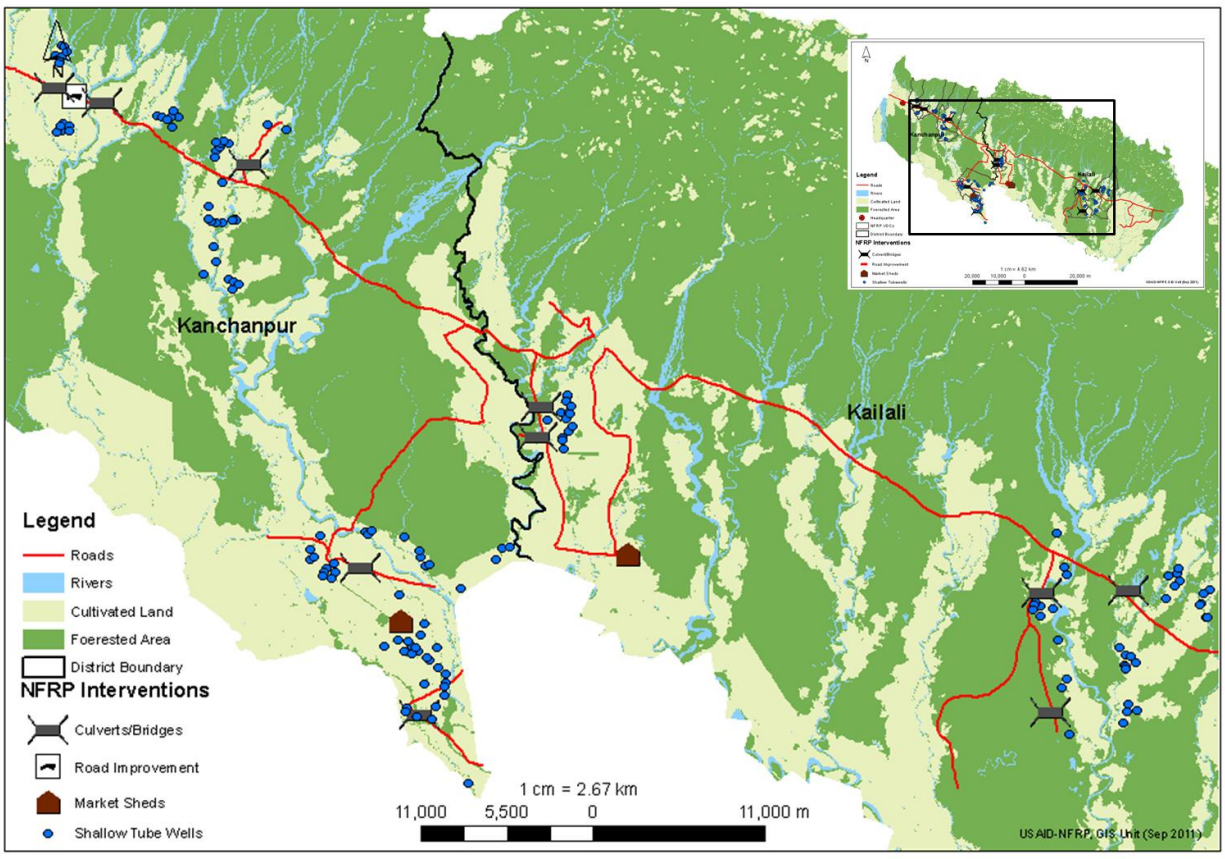
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **6. Objective 5: Protection of Women and Children** | | | | | | | |
| 6.1 | Number of people trained | 4,267 | 0 | 4,267 | 0 | 4,267 | 100% |
| | Number of women trained | 3,641 | 0 | 3,641 | 0 | 3,641 | 100% |
| | Number of youth trained | 1,937 | 0 | 1,937 | 0 | 1,937 | 100% |
| 6.2 | Number of women and youth organizations strengthened (assumes one group per VDC) | 72 | 0 | 72 | 0 | 72 | 100% |
| 6.3 | Number of people trained in Trafficking-in-person related issues with USG assistance (Program Element PS5.3 – Trafficking-in-Persons and Migrant Smuggling) | 4,329 | 0 | 4,329 | 0 | 4,329 | 100% |
| 6.4 | Subcontract funds disbursed (in USD) | $26,746 | $0 | $26,746 | $0 | $26,746 | 100% |
| 6.5 | Cost sharing leveraged (10% minimum, in USD) | $0 | $0 | $0 | $0 | $0 | N/A |
| **7. Objective 6: Windows of Opportunities** | | | | | | | |
| 7.1 | Number of special studies (Program Design and Learning Element) | 0 | 0 | 0 | 0 | 0 | N/A |
| 7.2 | Number of Baseline or Feasibility Studies (Program Design and Learning Element) | 0 | 0 | 0 | 0 | 0 | N/A |
| 7.3 | Subcontract funds disbursed | $0 | $0 | $0 | $0 | $0 | N/A |
| 7.4 | 10% cost sharing target (in USD) | $0 | $0 | $0 | $0 | $0 | N/A |

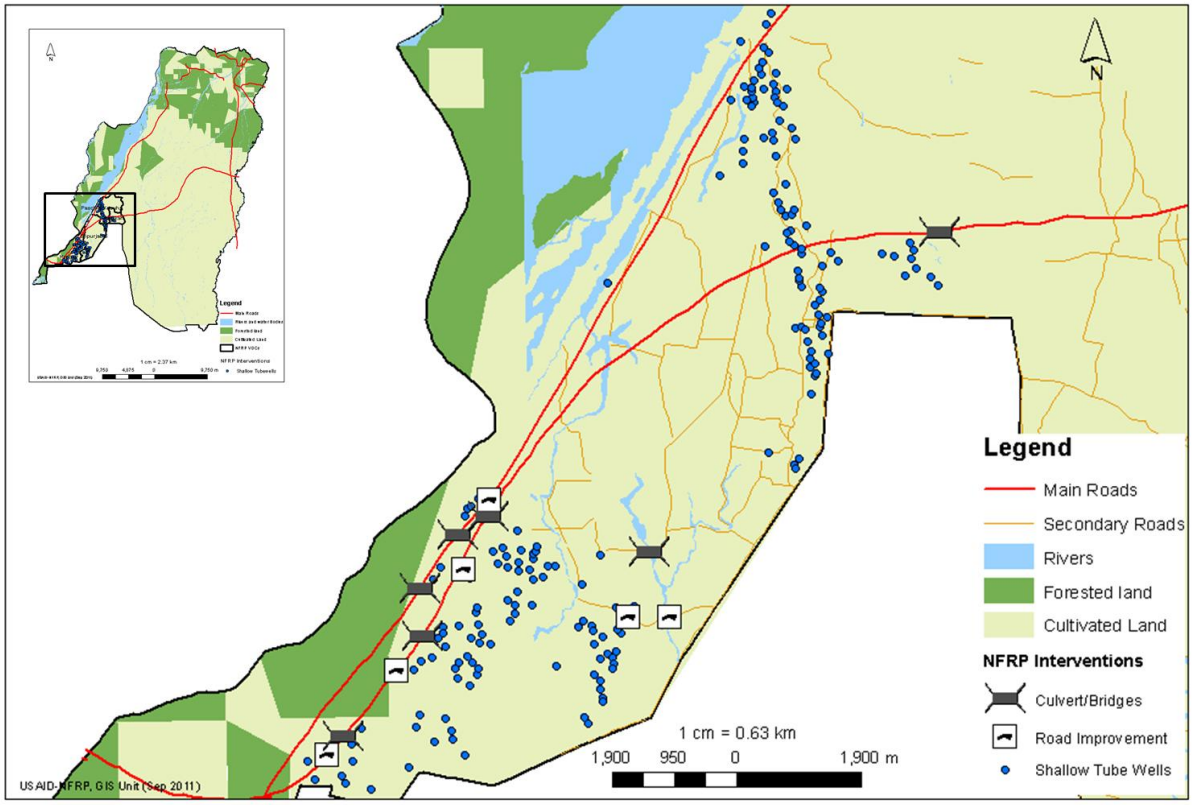
# ANNEX III: USAID-NFRP CLIENT DISTRIBUTION MAPS BY REGION

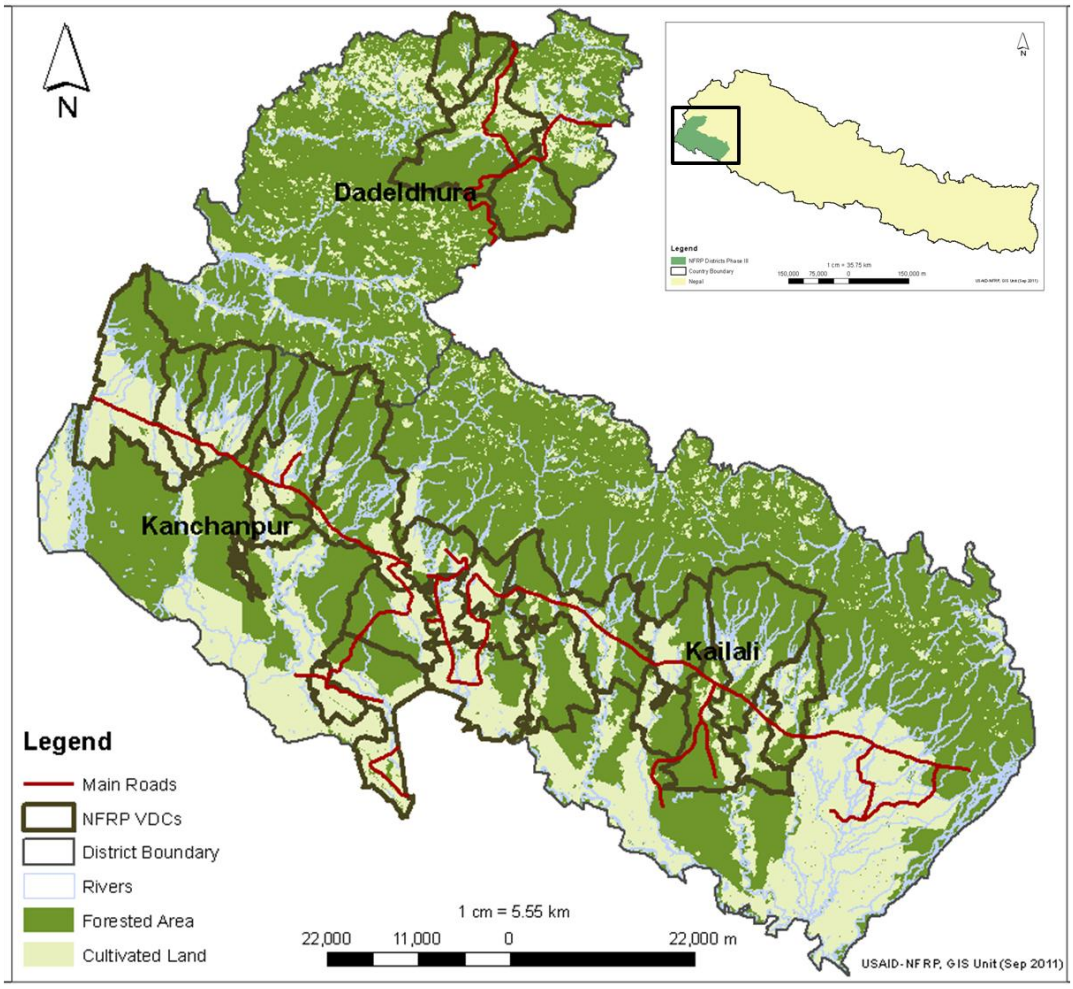


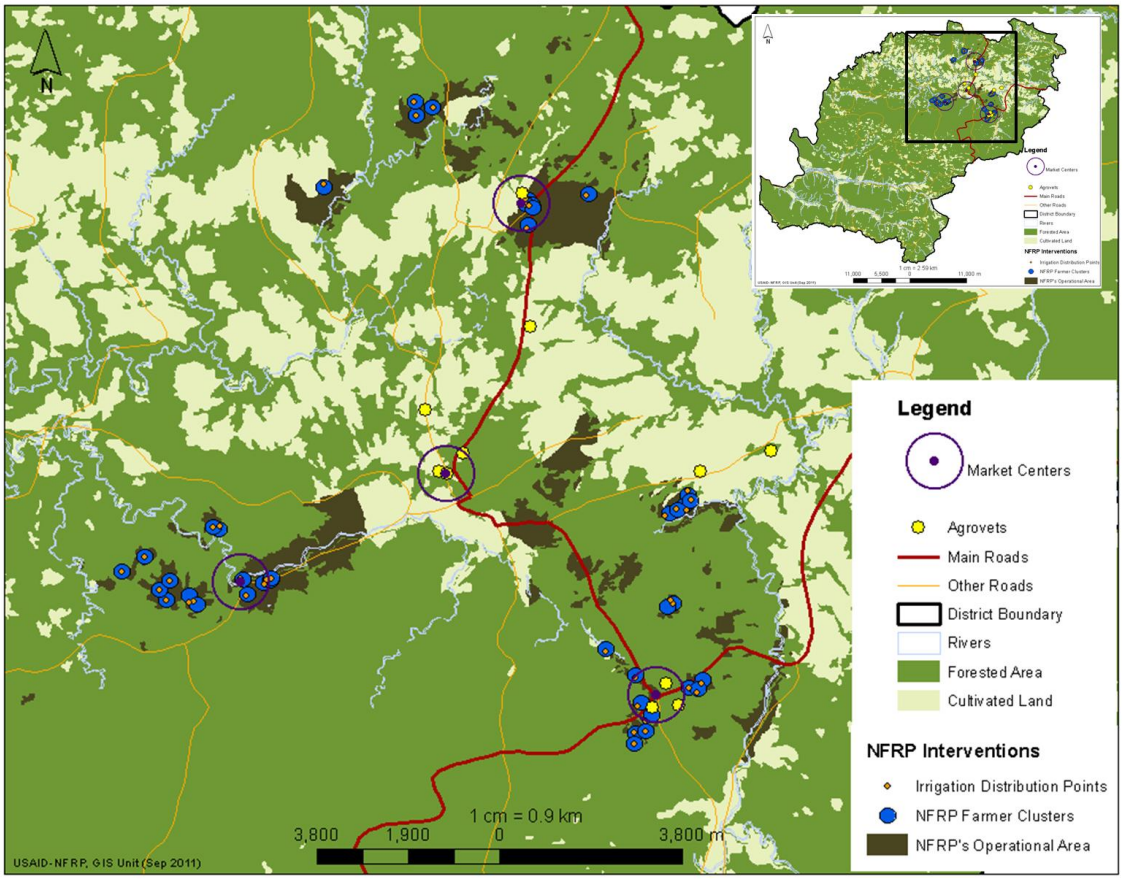



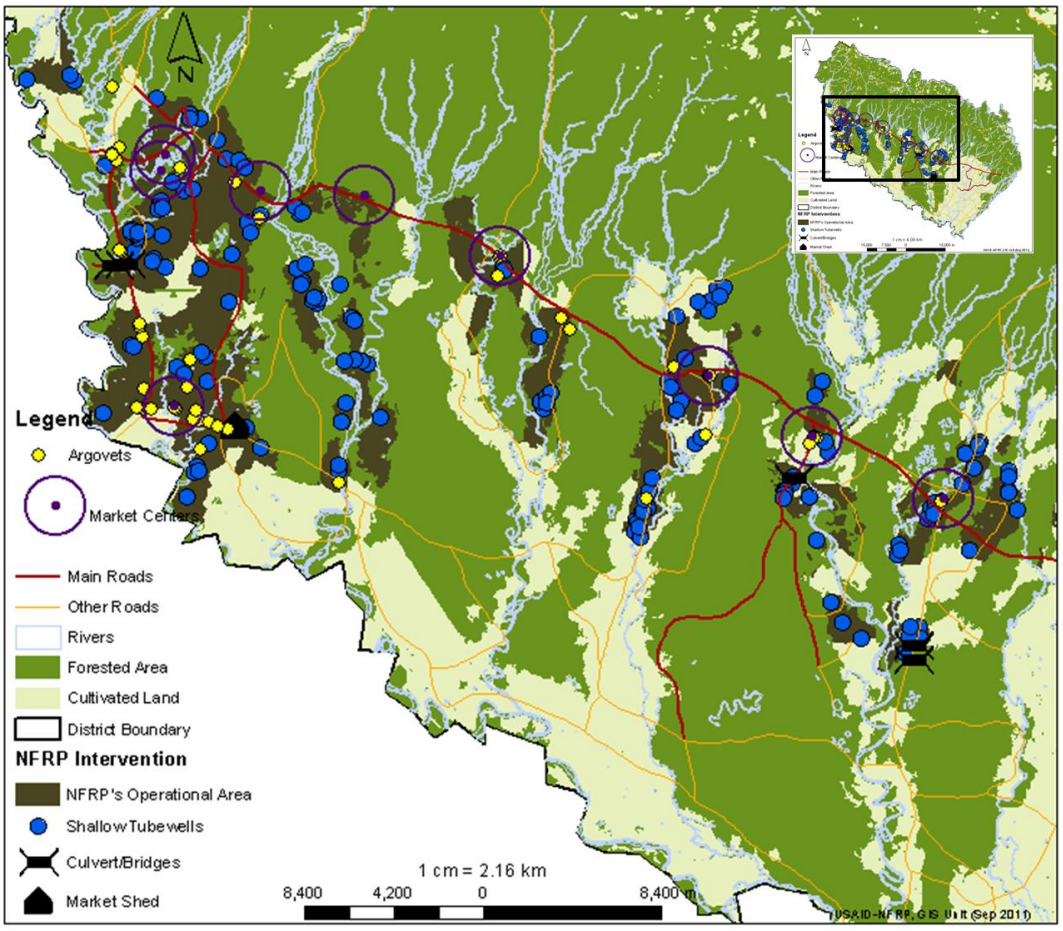

N
Kailali
Bardiya
Banke
Legend
Main Roads
Rivers
Forested Area
Cultivated land
District Boundary
NFRP Interventions
Culvert/Bridges
Schools
Surface Irrigation
Flood Controls
Shallow Tube Wells
1 cm = 4.54 km
19,000 9,500 0 19,000 m
USAID-NFRP, GIS Unit (Sep 2011)

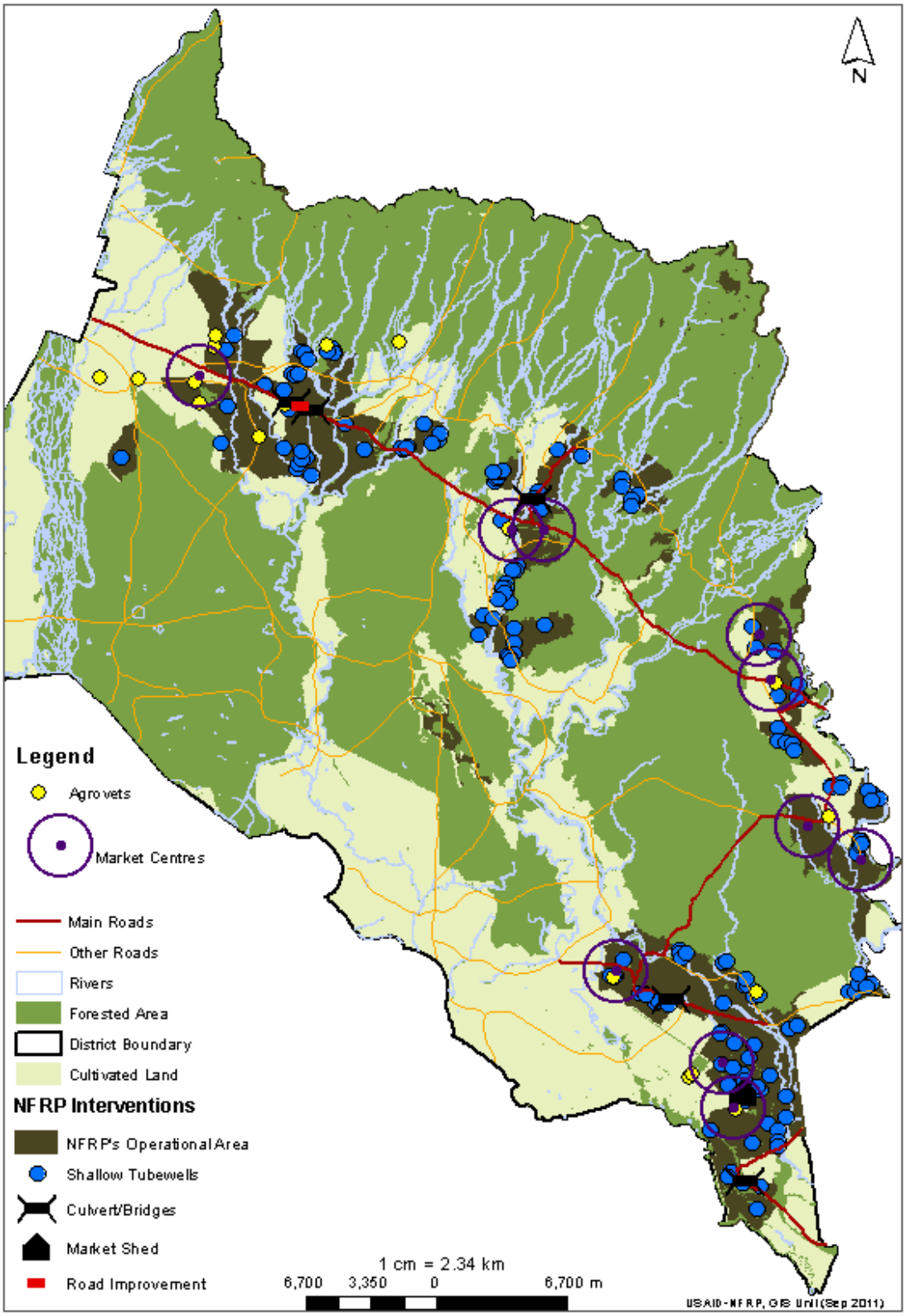

N
Kanchanpur
Kailali
Legend
Roads
Rivers
Cultivated Land
Foerested Area
District Boundary
NFRP Interventions
Culverts/Bridges
Road Improvement
Market Sheds
Shallow Tube Wells
1 cm = 2.67 km
11,000 5,500 0 11,000 m
USAID-NFRP, GIS Unit (Sep 2011)


N
Legend
Main Roads
Secondary Roads
Rivers
Forested land
Cultivated Land
NFRP Interventions
Culvert/Bridges
Road Improvement
Shallow Tube Wells
1 cm = 0.63 km
1,900 950 0 1,900 m
USAID-NFRP, GIS Unit (Sep 2011)


N
Dadeldhura
Kanchanpur
Kailali
Legend
Main Roads
NFRP VDCs
District Boundary
Rivers
Forested Area
Cultivated Land
1 cm = 5.55 km
22,000 11,000 0 22,000 m
USAID-NFRP, GIS Unit (Sep 2011)


N
Legend
Market Centers
Agrovets
Main Roads
Other Roads
District Boundary
Rivers
Forested Area
Cultivated Land
NFRP Interventions
Irrigation Distribution Points
NFRP Farmer Clusters
NFRP's Operational Area
1 cm = 0.9 km
3,800 1,900 0 3,800 m
USAID-NFRP, GIS Unit (Sep 2011)


N
Legend
Argovets
Market Centers
Main Roads
Other Roads
Rivers
Forested Area
Cultivated Land
District Boundary
NFRP Intervention
NFRP's Operational Area
Shallow Tubewells
Culvert/Bridges
Market Shed
1 cm = 2.16 km
8,400 4,200 0 8,400 m
USAID-NFRP, GIS Unit (Sep 2011)


N
Legend
Agrovets
Market Centres
Main Roads
Other Roads
Rivers
Forested Area
District Boundary
Cultivated Land
NFRP Interventions
NFRP's Operational Area
Shallow Tubewells
Culvert/Bridges
Market Shed
Road Improvement
1 cm = 2.34 km
6,700 3,350 0 6,700 m
USAID-NFRP, GIS Unit (Sep 2011)

# ANNEX IV: IRRIGATION MANUAL

## NOTE FROM THE PROJECT DIRECTOR

Studies and experiences have shown that non-technical aspects play an important role in irrigation planning, as well as in its sustainable operation and proper maintenance. There are many examples of projects that have failed due to mismanagement or lack of general maintenance. As a result, target beneficiaries are deprived of the service and the investment is squandered, forcing programs to re-build identical projects in the same locations.

Bearing this in mind, USAID-NFRP has developed this manual to describe irrigation technologies currently in use, particularly lift irrigation and pipe irrigation. It also contains information on maintenance and management of these technologies. Since its target group is rural farmers, the manual is presented in a simple language. It is our hope that the manual is instrumental in supporting the long-term effectiveness and sustainability of the USAID-NRFP-assisted irrigation groups and commercial farmers.

Joe Sanders
Chief of Party

*USAID/Nepal Flood Recovery Program*
*September 2011*

## BACKGROUND

Many local and international agencies are at work to improve the living standards of the Nepalese people, particularly in rural areas affected by the recent floods. A variety of programs focusing on agriculture, education, health, and small-scale community infrastructure are currently underway. However, in the absence of proper management and maintenance, many of the newly-constructed projects fall into disrepair, wasting valuable time and resources to reconstruct or repair the structures. Rural beneficiaries often lack organizational and planning skills necessary to fully reap the benefits of these projects.

This manual aims to enhance the beneficiaries' planning skills and capabilities by providing comprehensive information on irrigation techniques, best practices and resource collection.

## IRRIGATION

Irrigation is an artificial method of supplying dry land with water required for farming. Irrigation is especially essential when the soil lacks the amount of water needed for the crops.

***When is irrigation used?***

- When rainwater is inadequate or uneven
- When water is not readily available when needed
- When farming at higher volumes for commercial purposes
- When farming out of season

***Types of irrigation***

The different types and techniques of irrigation can be grouped into the following two categories:

- **Gravity (Surface) Irrigation**: A traditional technology and the most-widely used in Nepal, it irrigates the farm with water brought from surface sources like streams and lakes using pipes, ditches or canals. It is an inexpensive and simple technology, requiring little serious maintenance. Irrigation modes vary with the crops and plants.
- **Lift (Pumped) Irrigation**: Irrigates farms by lifting the water through a pump from nearby water sources. It is more popular in Terai areas.

Irrigation technology varies with plant needs and terrain; some are flood irrigation, furrow irritation, contour irrigation or sprinkle irrigation. The most popular irrigation technologies in the Terai and Hills regions are detailed below.

## SHALLOW TUBE WELL

More popular in the Terai, this technology is simple and inexpensive. Small groups of family farmers often install tube wells to irrigate their farms collectively, while others may do it individually. Typical capacity is approximately 6.6 hectares.

The well is constructed with a 4-inch diameter pipe drilled as deep as 60 feet into the ground. The pipe is linked into the tube well and dispenses water to the surface. Depending

on the geophysical nature of the ground, the shallow tube well is deep-bored in three different ways:

- **PVC Pipe-boring**: Used when the soil is sandy underground. The ground is first bored with a GI pipe, and once the water level is discovered, the GI pipe is replaced with a PVC pipe. It is the least expensive and simplest tube well technology.
- **MS Pipe-boring (Hammering)**: Used to run pipe through thick gravel or rock. Here, an MS pipe is hammered into the ground to reach the water and transfer to the tube well. This type of boring is more expensive and more difficult than the PVC pipe method.
- **T-boring**: When the underground water source is poor, T-boring is recommended. Water is pooled from four to six different spots through 1-2 inch diameter HDP pipes into a single outlet in the shape of a T (where the tube well is installed). It is less effective than other boring techniques because the suction capacity of the pump is weakened.

Although the boring technologies are different, the same shallow tube well is used in drawing and dispensing the water in each instance.

Regardless of the boring technique chosen, the pump is always an important component of lift irrigation. Since the long-term use of the pumps largely depends upon its operation and maintenance, it is necessary that the users have some basic knowledge in this area.

## PUMP SET

A pump set is the machinery used in lifting the water from underground sources. The pump's capacity is measured in horsepower and generally ranges from 5-10 horsepower, which can irrigate two to four hectares (60-120 kattha) of land. Pump sets are either diesel or electric.

### *Diesel Pump*

Diesel pumps are applicable in areas without steady electricity. Diesel operated pump sets are widely used across the Terai belt of the country. There are two main parts of the pump:

- **Engine**: The engine is an important part of the pump set, and includes a cylinder, a piston and a crankshaft. Diesel burns in the cylinder to create gas that builds pressure on the piston to move up and down, rotating the crankshaft. When the engine is on, heat develops in the cylinder from the burning diesel and gas. The cooling system adds water to the engine.
- **Pump and fan**: The engine is connected with the pump and fans so that the fan rotates when the engine is on and pumps the water.

### *Precautions for operating a diesel pump*

- **Checking engine oil**: Excessive heat may develop when moving parts create friction in the engine. Before stating the engine, it is essential to make sure that there is adequate engine oil otherwise the over-heated engine can get permanently damaged.

- **Checking the diesel:** It is important to ensure there is enough diesel engine oil to last the total number of hours the machine will be used. Without enough diesel oil, the engine is likely to stop.
- **Checking cooling system:** Before starting the engine, check to make sure there is water in the cooling system. The pipes joining the “T” must be filled with water and free of leaks.
- **Checking water on the fan:** The case housing the fan must be filled with water because air in the case weakens the engine’s ability to draw water. There can be no leakage in walls, bends or suction pipes.

***Maintenance and Repairs of the Pump Set***

Pump sets, like every machinery item, require regular maintenance. Lack of maintenance usually leads to poor performance and even permanent damage of the pump. Additional precautions and considerations include:

- The quality of engine oil deteriorates over time. It gets thin and black after the first 50 hours of operation and subsequently after every 100 hours. Regular refills and oil changes will ensure the engine operates properly.
- If the running engine gets short on diesel, its nozzle fills with air and the engine stops. In this situation, refill the diesel and open the air-screw to let air out until diesel appears there. Then turn off and restart the engine. The same process should be followed when operating a pump that has been sitting unused for a long period of time.
- If a pump has sat unused for a long time, engine parts might get jammed. It is advisable to operate the pump at least five to ten minutes every 10 days.
- Multiple users create more wear and tear on the pumps. A maximum of two operators is recommended.
- The pump should be installed on a flat surface.
- The pump should be properly covered when not in use to protect it from water and dust.
- Once every six months, or 300 hours, clean or replace the air and oil filters.
- A new pump set should be operated at a slower speed at first. During the first 20 hours of use, the pump should rest for 15 minutes after every two hours.
- Consult a mechanic to address other issues with the pump set.

## SUMBMERSIBLE PUMP

Water scarcity is a major obstacle in the Hills region. Rivers and streams arrive from distant sources, making pipe irrigation difficult. The local streams must therefore be treated as the source. A submersible pump is used to bring water from sources at a lower elevation to farms in the mountains. Such a pump is also advisable when the water level is deeper than 15 feet.

A submersible pump, as the name suggests, is submersed into the water and is useful to carry large volumes of water to uphill farms. Such pumps are available in four, six or eight inch diameters.

A submersible pump is protected by a larger metallic pipe. It is easy to operate and inexpensive to repair.

***Precautions for Operating the Submersible Pump***

- Make sure that the pump is well submersed in the water
- Check the electricity voltage before starting the pump
- Make sure that only the designated operator handles the pump
- Do not use the pump to carry muddy water
- Operate the pump for at least five minutes once a week

## PIPE-BASED IRRIGATION

Pipe irrigation brings water from rivers, streams, lakes or ponds. The system requires building a tank if the water source is small and irregular. Since water volume in this irrigation system is smaller than in ground irrigation (canals), it is not recommended for crops like rice or wheat. It is useful for crops that require less water and is also useful in hilly areas. There are multiple outlets along the pipe system that allow for water to be dispersed to a number of locations.

The pipe irrigation system is comprised of the following parts:

- **Intake**: The construction built on the water source; it channels the running water into the collection chamber.
- **Collection Chamber**: Used when collecting water from a number of sources or from clean stream water. It directs the collected water into the main pipeline.
- **Pipeline**: Transports water from one place to another. The pipeline should be installed with the HDP pipes marked with the Nepal Standard (NS). They are available in blue, green and yellow colors for four, six and 10 kilogram pressures respectively.
- **Wash-out**: Washes out the sand, soil and other unwanted deposits before sending to the main pipeline, useful when using stream water sources. It is U-shaped, and fitted at the bottom of the pipeline system, so that unwanted sediments can be gathered and removed.
- **Air valve**: An air valve is created at the top end of the main pipeline that links the intake with the reservoir and is shaped like an inverted U. If there is any barrier to the water flow in the main pipeline, the air valve is opened to let the air out, so that the water flow resumes smoothly after capping the valve.
- **Distribution chamber**: Constructed when there are two or more reservoirs in use to distribute the water as needed.

- **Reservoir**: Constructed using a cement-based mixture, a reservoir collects water overnight.
- **Valve chamber**: Fitted with GI and brass fittings and connected with flexible pipes to transport water to farm-lands.

***Pipe Irrigation: Technical problems and solutions***

A common problem facing this irrigation system is water blockage. The main causes of the problem and their solutions are discussed below:

- Water supply usually gets blocked when heavy rains and landslide damage the intake, reservoirs and valve chambers. It is recommended to build pipe irrigation systems outside of flood-prone areas or build a support wall for additional protection.
- Landslides can crack and break connecting pipes. If this occurs, relocate the pipelines to a safer zone.
- The intake should be cleaned regularly to prevent blockage of sand, leaves or soil. The wash-out valve should also be cleaned regularly to prevent blockages.
- Water flow gets blocked when the pipe is filled with air. Uncap the air valve to let the air escape.

## IRRIGATION MANAGEMENT

Irrigation systems must be well-managed and well-maintained in order to stay sustainable. Poor management has resulted in partial or full-fledged failure of many irrigation infrastructure projects. A competent manager, however, can turn the same project into a success. All system users, not just the manager, need to understand and follow the guidelines of proper use and maintenance of the irrigation system.

- Users should always be alert and aware.
- There should be an active users committee to manage the project. Users who are literate, unbiased and have an interest in social service can serve on the committee.
- There should be a caretaker employee to keep a watchful eye on the project assets and maintain them. He/she should be chosen from among the users and should possess conceptual knowledge of the project and be able to make minor repairs.
- Training programs for the caretaker should be offered when possible.
- The user committee should pool resources to fund management overheads, caretaker's wages, maintenance costs and other operational expenses. It should levy service charges from the users in consultation with the users.
- The committee should maintain proper accounting and inventory records.
- The committee should draft and distribute rules or bylaws for the irrigation system users.

***Users Committee***

The committee should be comprised of seven to nine members of the local community. They can be appointed by consensus or elected in a general, majority-based election. The users committee has legal recognition and can make independent decisions on the project.

The committee is mainly tasked with serving the users through effective management of the project. The committee's other responsibilities include:

- Ensuring the project is, and remains, economically viable
- Motivating the target beneficiaries to discuss issues and make decisions as a group
- Reaching out to local government, donor agencies and other organizations
- Accumulating resources that the users cannot collect individually
- Maintaining order and social cooperation with regards to the project

***Who qualifies to be chosen for the user committee?***

The project's success depends on the user committee's dedication, motivation and ability. Staffing the user committee with qualified people is a primary and important aspect of the irrigation project. The committee members ideally posses the following capabilities:

- Social activist; values social interests over personal
- Not directly aligned with any political entity
- Reliable and well-respected in the community
- Ability to motivate and mobilize others
- Democratic thinkers
- Healthy, intelligent, high level of social morality
- Permanent resident with no plans to move
- Quick thinker, decisive
- Interest in institutional affairs
- Not involved in any financial irregularities
- Literate

***Characteristics of an Active Users Committee***

The knowledge, skill and capability of the users committee alone do not guarantee success. All beneficiaries need to be active in the project in order to create and maintain sustainable energy and excitement around the project. Therefore, the members should ensure that the following fundamentals exist in the committee:

- Mutual trust and understanding
- Transparent, democratic and unanimous decision-making process
- Compliance with rules and statute of the committee
- Economic viability, and capability to bear future maintenance costs and to partner with new projects

- Capacity to make autonomous settlement of internal conflicts

If unfavorable situations, such as those stated below, arise, members should convene as soon as possible to address the problems.

- Irregular committee meetings
- The committee has emerged as a political battleground
- Personal interests have prevailed over institutional interests
- Committee members are passive or unresponsive
- There is an abundance of unnecessary conflict

***Women participation***

Women constitute half of the total population in Nepal, but their participation in the decision-making processes is often minimal. They are, however, more active in the agricultural sector.

It is vital to the success of the irrigation projects that women are involved. In recent years, the participation of women in politics from the local to central level as well as in other sectors is on the rise. The waves of change have also reached our rural societies: there is increased participation of women in local users committees, including several women-led projects.

Many cases point to the wisdom of appointing women to leadership positions, as they are often more financially disciplined than their male counterparts. Other reasons that women it is important to include women are:

- Women are generally more consistent and timely with their responsibilities than men
- Women generally take better care of resources important to their households
- There is a need to motivate women to become more involved in productive and community programs that are beyond their traditional household chores
- It is a national priority to ensure at least 50 percent of women participate in agriculture
- Women participation ensures the users committee are more active

***Resource Collection***

Resources generally refer to financial support, labor and materials belonging to the organization or committee. They allow a committee to plan ahead and develop a strategic workplan. Resources provide funding, increase user participation and help promote unity among the group.

***How to collect resources***

In resource-strapped communities, collecting resources presents a challenge, but it is an important challenge to tackle as these resources can make or break the success of a project. The users committee should keep the following in mind when seeking resources:

- Explaining the purpose of the resources to the users
- Organizing a mass meeting of users to make decisions on resource collection
- Reaching consensus from users on resource collection

- Ensuring that resource collection will add no burden to users

***Sources of resources***

The primary income source of the users committee is the service charges collected from the users. The users committee can explore more sources depending on its particular situation and abilities. Generally, the users committee can identify the following as potential sources:

- Regular levies from the users
- Service charges to be levied from neighboring users or external groups
- Interest generated by the committee's investments
- Charges from organizational or individual visitors
- Income from fairs and charities

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*PHOTO: This Nepalese woman is learning better agricultural practices from USAID-NFRP that are translating into higher yields and increase incomes for her and her family.* Photo by Fintrac Inc.